ARIZONA HOUSE OF REPRESENTATIVES
Fifty-second Legislature – Second Regular Session

COMMITTEE ON HEALTH

Report of Regular Meeting
Tuesday, February 23, 2016
House Hearing Room 4 -- 2:00 p.m.

Convened 4:02 p.m.
Recessed
Reconvened
Adjourned 6:05 p.m.

Members Present
Mr. Friese
Mr. Lawrence
Mr. Meyer
Mrs. Cobb, Vice-Chairman
Mrs. Carter, Chairman

Members Absent
Mr. Boyer

Agenda
Original Agenda – Attachment 1

Request to Speak
Report – Attachment 2

Presentations

Name	**Organization**	**Attachments** (Handouts)
	The State of Cervical Cancer in Arizona	3
Julie Engstrom-Melnyk	Roche Diagnostics Corporation	
Brian Hummel	American Cancer Society	
Virginia Warren	Arizona Department of Health Services	
	The Faces of Multiple Sclerosis	Video (unavailable)
Terry Johnson	Past Chair, Arizona Chapter of National Multiple Sclerosis Society and Member of Arizona House Ad Hoc Committee for Multiple Sclerosis Education and Awareness	
	The Dangers of Indoor Tanning	4
Brian Hummel	American Cancer Society	
Dr. Aaron Mangold	Mayo Clinic	
Christine Nelson	Cancer Survivor	
	Preventing Sudden Death in Sports	5
Randy Cohen	C.A.T.S. Medical Services, Univ of AZ	
Lori White representing Chris White	Head Athletic Trainer, Xavier College Preparatory	
Wendy Grant	Cardiac Sonographer, Biltmore Cardiology Athletic Trainer, Cienega High School	
Deanna Contaoi	Executive Consultant, AZ Athletic	
Richard Ball	Trainer's Association	

Committee Action

Bill	**Action**	**Vote**	**Attachments** (Summaries, Amendments, Attendance)
SCR1005	DP	5-0-0-1	6, 7
	COMMITTEE ATTENDANCE		8

Sandy Kelley

Sandy Kelley, Chairman Assistant
Wednesday, February 24, 2016

(Original attachments on file in the Office of the Chief Clerk; video archives available at http://www.azleg.gov)

Convened: 4:02 pm
adjourned: 6:05 pm

ARIZONA HOUSE OF REPRESENTATIVES
Fifty-second Legislature - Second Regular Session

REGULAR MEETING AGENDA

COMMITTEE ON HEALTH

DATE Tuesday, February 23, 2016 ROOM HHR 4 TIME 2:00 P.M.

Members:

Mr. Boyer	Mr. Lawrence	Mrs. Cobb, Vice-Chairman
Mr. Friese	Mr. Meyer	Mrs. Carter, Chairman

Presentations

The State of Cervical Cancer in Arizona

- Julia Engstrom-Melnyk, PhD, Medical & Scientific Affairs, Roche Diagnostics Corporation
- Brian Hummel, Arizona Government Relations Director, American Cancer Society Cancer Action Network, Inc.
- Virginia Warren, Arizona Cancer Control Office Chief, Arizona Department of Health Services

The Dangers of Indoor Tanning

- Brian Hummell, Arizona Director of Government Relations, American Cancer Society Cancer Action Network
- Dr. Aaron Mangold, Mayo Clinic
- Christine Nelson, cancer survivor

The Face of Multiple Sclerosis

- Terry Johnson, Past Chair, Arizona Chapter of the National Multiple Sclerosis Society and member of the Arizona House Ad Hoc Committee for MS Education and Awareness

Preventing Sudden Death in Sports

- Randy Cohen, AT, DPT, Associate Director of Athletics, C.A.T.S. Medical Services, University of Arizona
- Chris White, MS, AT, Head Athletic Trainer, Brophy College Preparatory
- Wendy Grant, Cardiac Sonographer, Pediatric and Adult Cardiology, Biltmore Cardiology
- Deanna Contaoi, AT, Athletic Trainer, Cienega High School

Bills	Short Title	Strike Everything Title
SCR1005	rights of caregivers; recognition (Barto: Bradley, Burges, et al) 5-0-0-1 HEALTH, RULES	

ORDER OF BILLS TO BE SET BY THE CHAIRMAN

slk
2/18/16

People with disabilities may request reasonable accommodations such as interpreters, alternative formats, or assistance with physical accessibility. If you require accommodations, please contact the Chief Clerk's Office at (602) 926-3032, TDD (602) 926-3241.

Attachment 1

Information Registered on the Request to Speak System

House Health (2/23/2016)

SCR1005, rights of caregivers; recognition

Testified in support:

Deborah Geesling, representing self; Cheri VanSant, representing self; Elizabeth Singleton, representing self

Support:

Rae Hopf, DAVID'S HOPE; Don Isaacson, LEADINGAGE ARIZONA; Mary Lou Brncik, representing self; Russell Smoldon, PHOENIX CHILDREN'S HOSPITAL; Annie Mooney, PHOENIX CHILDREN'S HOSPITAL; Barbara Fanning, Arizona Hospital And Healthcare Association; Jason Bezozo, Senior Program Director, Government Relations, BANNER HEALTH ARIZONA

Neutral:

Christopher Vinyard, AZ HEALTH CARE COST CONTAINMENT SYSTEM; Sarah Kader, representing self

All Comments:

Sarah Kader, Self: The Arizona Center for Disability Law supports the independence of individuals with disabilities.

Attachment 2

PLEASE COMPLETE THIS FORM FOR THE PUBLIC RECORD

HOUSE OF REPRESENTATIVES

Please PRINT Clearly

Committee on Health Bill Number HCR 2039

Date 2/23/16 ☒ Support ☐ Oppose ☐ Neutral

Name Doug Mykol Need to Speak? ☒ Yes ☐ No

Representing ~~Self~~ HSE Ad Hoc Com on MS Awareness + Education Are you a registered lobbyist? N

Complete Address 6333 N Scottsdale Rd #6, Sd. AZ 85250

E-mail Address DDMykol@gmail.com Phone Number 360/791-2624

Comments: Thank You.

FIVE-MINUTE SPEAKING LIMIT

PLEASE COMPLETE THIS FORM FOR THE PUBLIC RECORD

HOUSE OF REPRESENTATIVES

Please PRINT Clearly

Committee on Health Bill Number HCR 2039

Date 2.23.16 ☑ Support ☐ Oppose ☐ Neutral

Name Louise Donowski Need to Speak? ☑ Yes ☐ No

Representing MS Society AZ Chapter Are you a registered lobbyist? NO

Complete Address 5401 E. Sweetwater Av. Scdle AZ 85254

E-mail Address ljdonowski@msn.com Phone Number 602-430-2649

Comments:

FIVE-MINUTE SPEAKING LIMIT

PLEASE COMPLETE THIS FORM FOR THE PUBLIC RECORD

HOUSE OF REPRESENTATIVES

Please PRINT Clearly

Committee on _____ Bill Number HR 2039

Date 2/23/16 ☑ Support ☐ Oppose ☐ Neutral

Name JIM LIBERTY Need to Speak? ☑ Yes ☐ No

Representing NATIONAL MS SOCIETY Are you a registered lobbyist? NO

Complete Address 10813 E. CELESTIAL DRIVE SCOTTSDALE AZ 85260

E-mail Address jimlibaty@hotmail.com Phone Number 7327631959

Comments: _____

*****FIVE-MINUTE SPEAKING LIMIT*****

PLEASE COMPLETE THIS FORM FOR THE PUBLIC RECORD

HOUSE OF REPRESENTATIVES

Please PRINT Clearly

Presentation Preventing Sudden Death in Sports

Committee on Hlth 2/24/16 Bill Number _____

Date 2/23/16 ☐ Support ☐ Oppose ☐ Neutral

Name Richard T. Bill Need to Speak? ☑ Yes ☐ No

Representing Self Are you a registered lobbyist? No

Complete Address 7150 E. Camelback Rd Ste 444 Scottsdale AZ 85251

E-mail Address RTbill@cox.net Phone Number 480-663-6748

Comments: _____

*****FIVE-MINUTE SPEAKING LIMIT*****

PLEASE COMPLETE THIS FORM FOR THE PUBLIC RECORD

HOUSE OF REPRESENTATIVES

Please PRINT Clearly

Committee on Health

Bill Number Presentation Preventing Suicide in Sports Death in Sports

Date 2/23/16

❑ Support ❑ Oppose ❑ Neutral

Name Lori White for Chris White

Need to Speak? ❑ Yes ❑ No

Representing _____

Are you a registered lobbyist? ____

Complete Address _____

E-mail Address _____

Phone Number _____

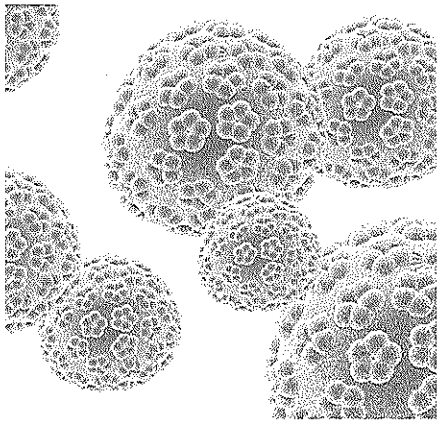
Comments: _____

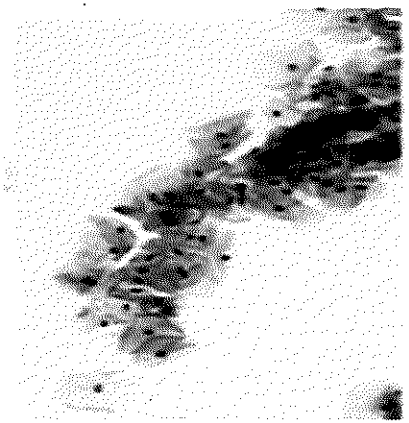
FIVE-MINUTE SPEAKING LIMIT

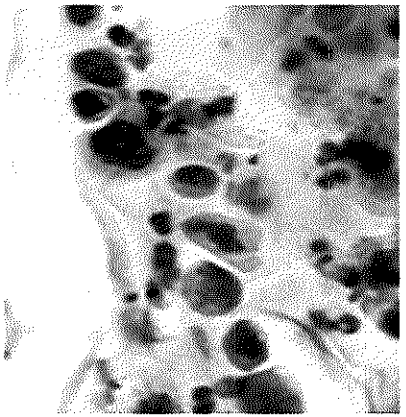
Cervical Cancer Screening Strategies

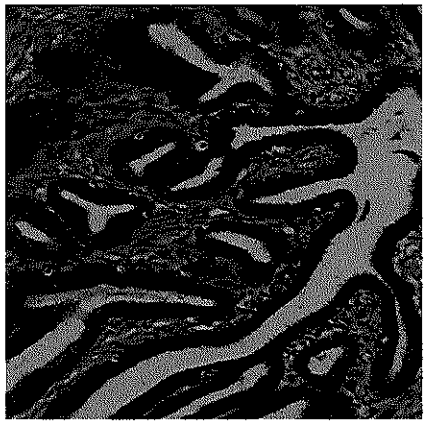
Julia Engstrom-Melnyk, PhD

Medical and Scientific Affairs
Roche Diagnostics Corporation









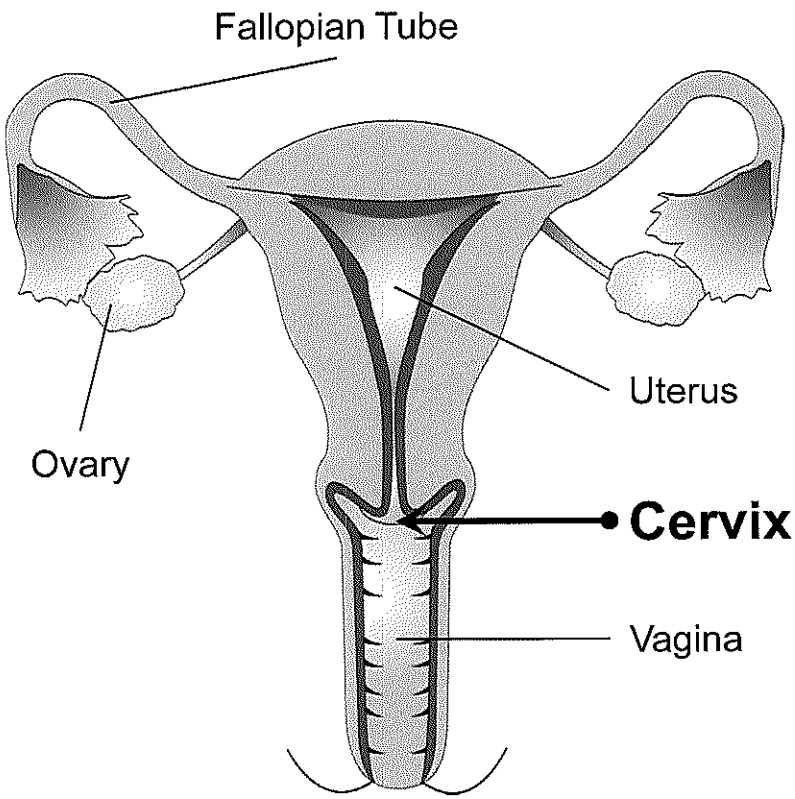
Attachment 3

Cervical Cancer

Asymptomatic until disease becomes invasive

All women are at risk for cervical cancer

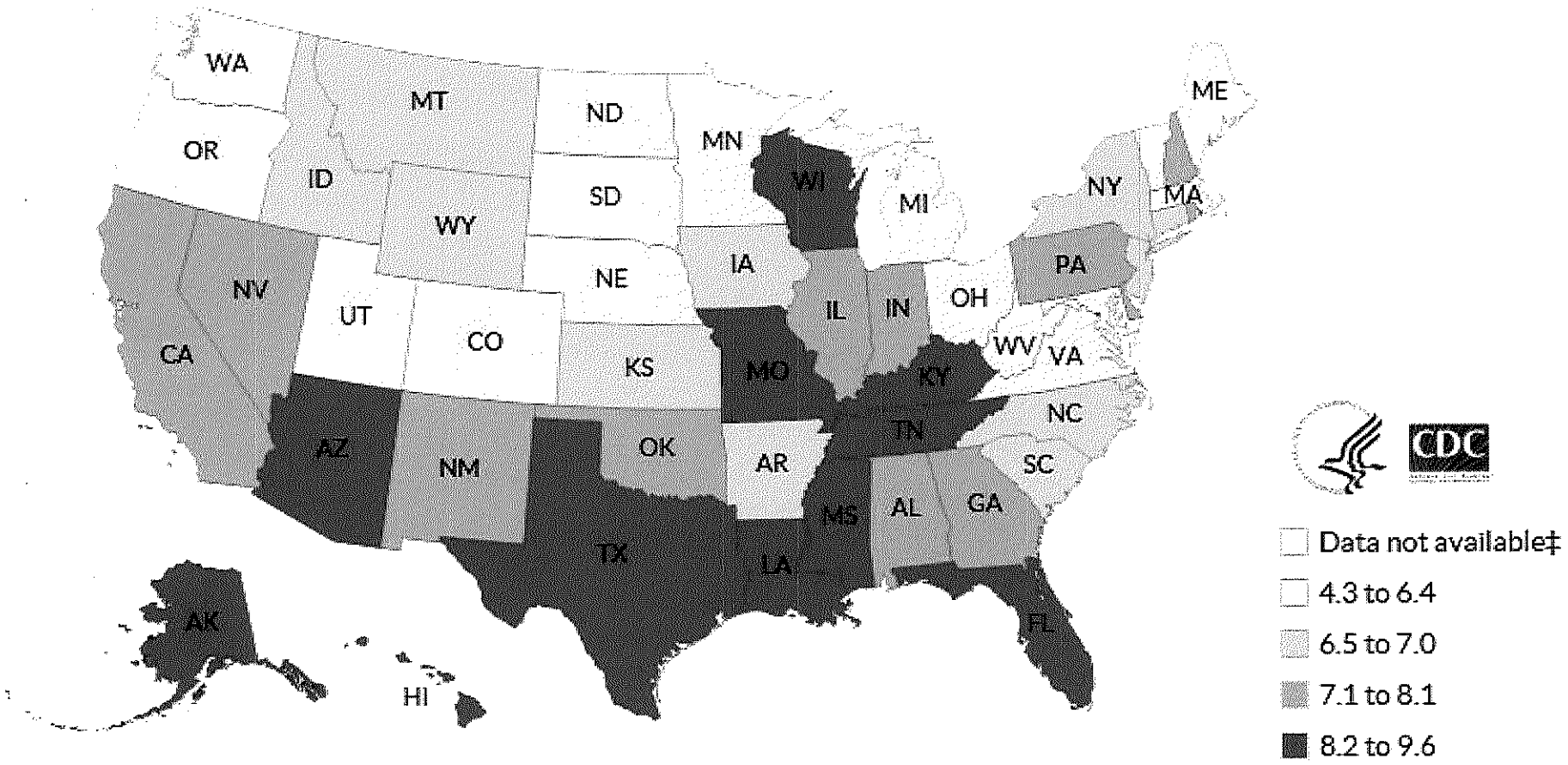
- Cervical pre-cancers and early-stage cancers are asymptomatic
- Cervical cancer is the **easiest gynecologic cancer to prevent** with available vaccinations as well as regular screening tests and follow-up



http://www.cdc.gov/cancer/cervical/pdf/cervical_facts.pdf (Accessed 2/18/2016)

Incidence of cervical cancer

Cervical Cancer incidence rates in the U.S., by state (2012)

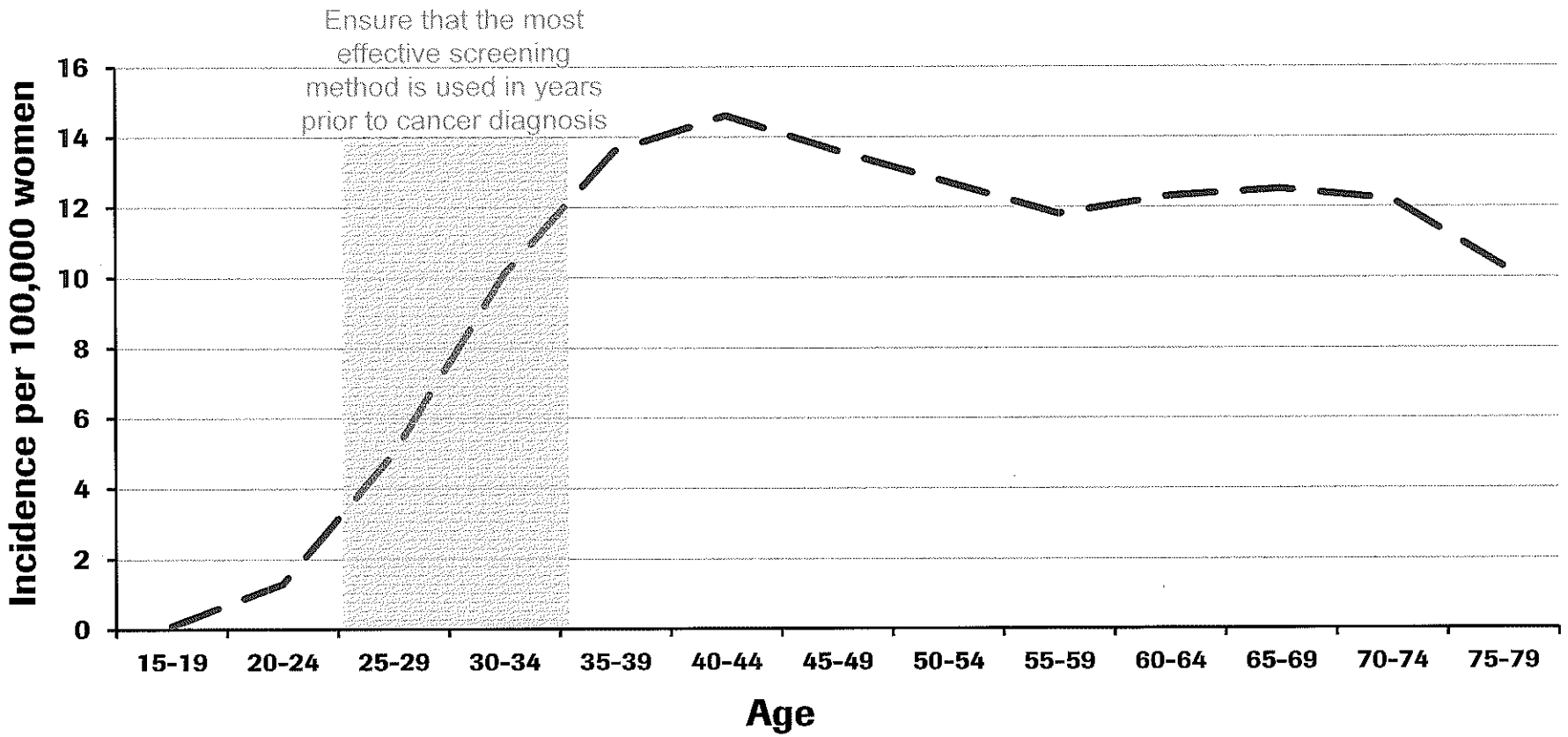


http://www.cdc.gov/cancer/cervical/statistics/state.htm (Accessed 2/18/2016)

Incidence rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population

Incidence of Invasive Cervical Cancer

SEER Tumor Registry data (1975-2012)



Proper identification and treatment of pre-cancerous lesions helps *prevent* cervical cancer from developing

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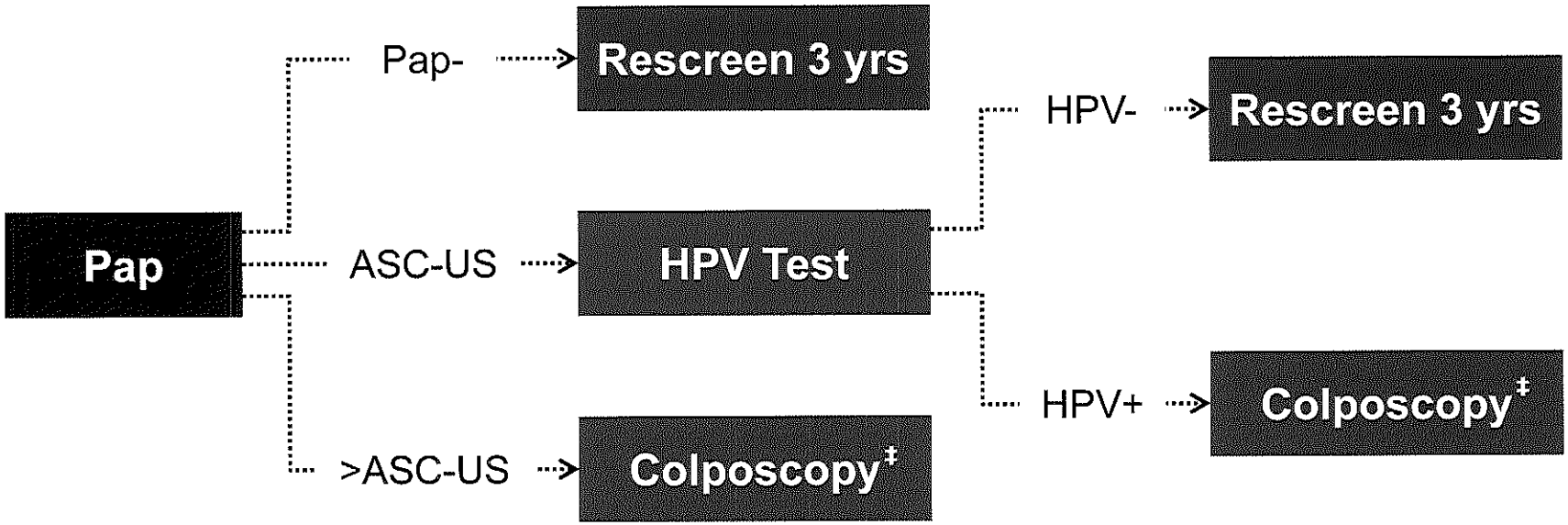
Cancer of the Cervix Uteri (Invasive). SEER incidence and US death rates, age-adjusted and age-specific rates, by race. Table 5.7. http://seer.cancer.gov/csr/1975_2012/results_merged/sect_05_cervix_uteri.pdf Accessed January 19, 2016

Screening option #1

Cytology screening

Women 21-29: Recommended screening method*
Women 30-65: Acceptable screening option*



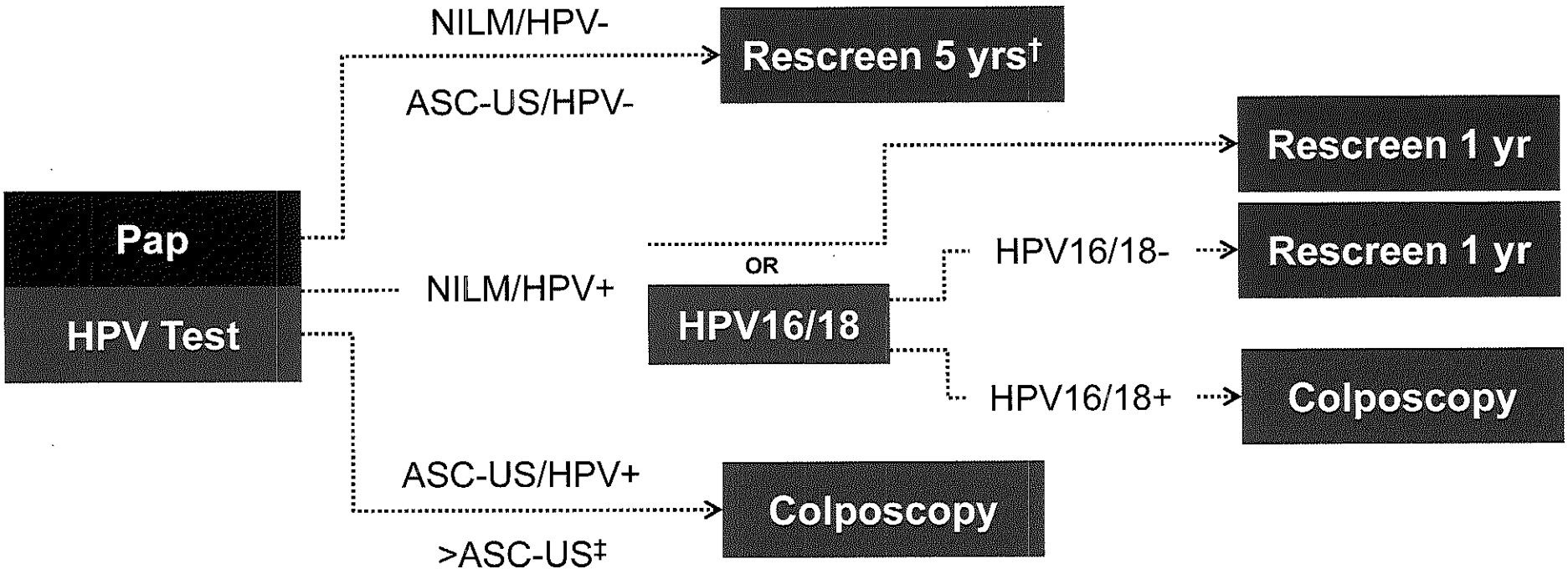
*Per 2012 ACS, ASCCP, ASCP screening guidelines[1] and ACOG Practice Bulletin[2]
‡ Management strategy may be different for women 21-24 years of age[3]

1. Saslow et al. (2012). AJCP
2. ACOG practice bulletin 157 (2016)
3. Massad et al. (2013). JLGTD

Screening option #2

HPV & Pap co-testing: multiple screening and management paths

Women 30-65: Preferred screening option*



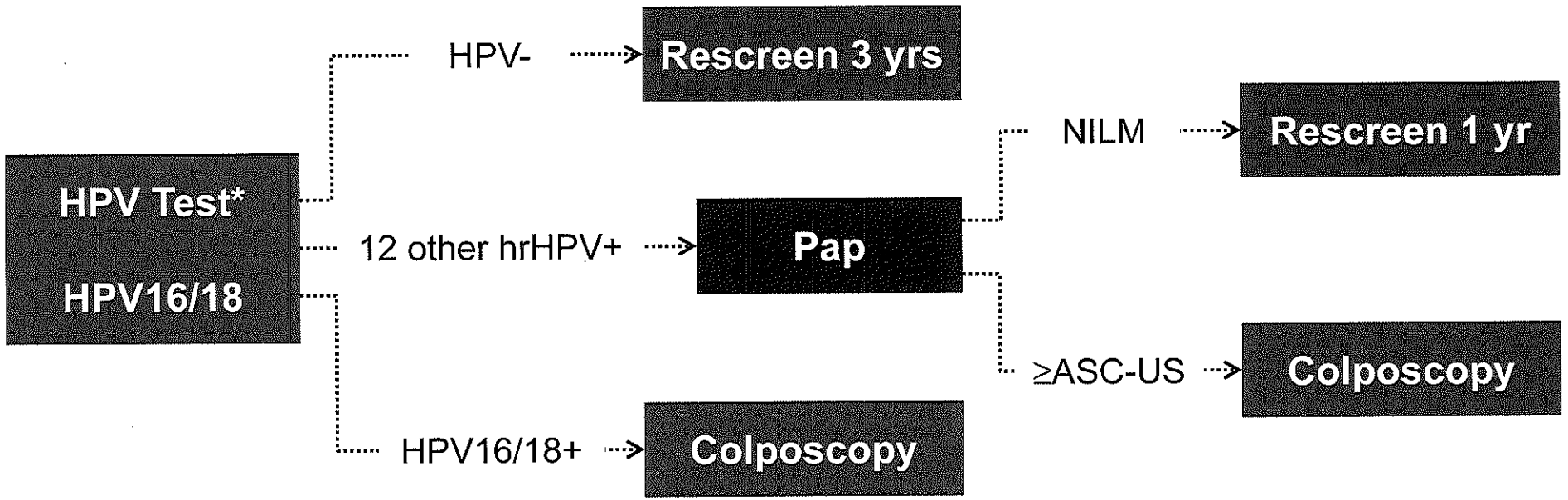
*Per 2012 ACS, ASCCP, ASCP screening guidelines[1] and ACOG Practice Bulletin[2]
† ASC-US/HPV-: co-test at 3 years[3]
‡ LSIL/HPV-: repeat co-testing at 1 year is preferred[3]

1. Saslow et al. (2012). AJCP
2. ACOG practice bulletin 157 (2016)
3. Massad et al. (2013). JLGTD

Screening option #3

Primary HPV Screening

Women ≥ 25 years of age



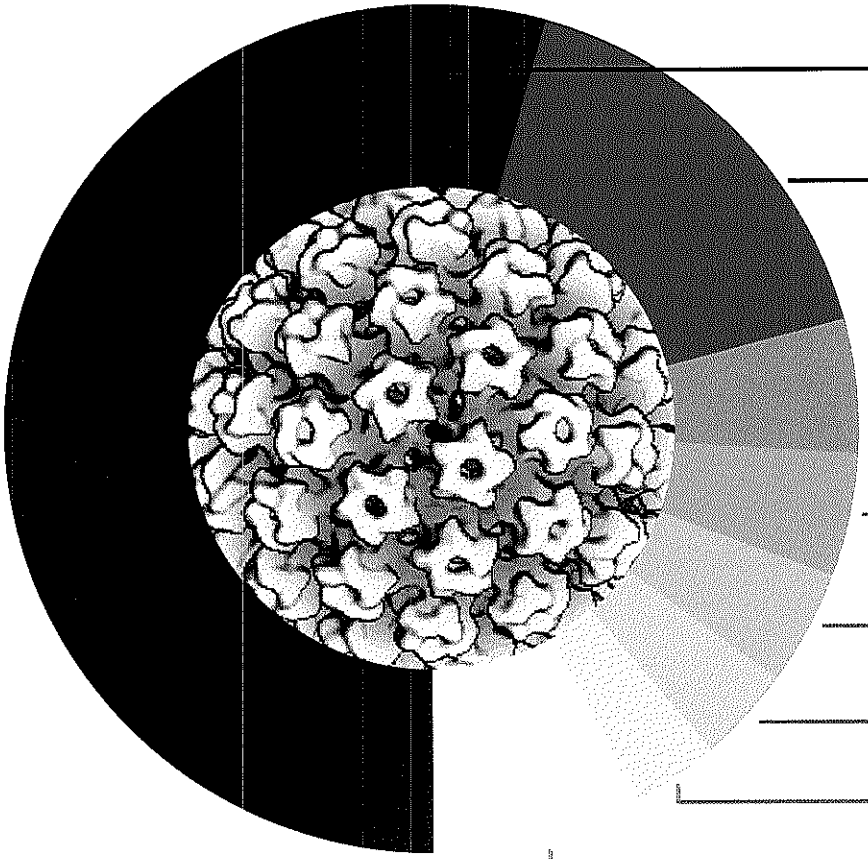
*** Only hrHPV test with FDA primary HPV screening indication must be used**

Alternative option to current cytology-based screening methods per SGO/ASCCP interim clinical guidance[1] and ACOG Practice Bulletin No. 157[2]

1. Huh et al. (2015). Gynecologic Oncology
   Huh et al. (2015). Obstet Gynecol
   Huh et al. (2015). J Lower Gen Tract Dis
2. ACOG practice bulletin 157 (2016)

Human Papillomavirus (HPV) types in cervical cancer

Cervical cancer is one of the only cancers directly attributed to a viral infection



HPV16 (54.4%)

HPV18 (16.5%)

> 70%

HPV58 (5.1%)

HPV33 (4.7%)

HPV45 (4.4%)

HPV31 (3.6%)

HPV52 (3.4%)

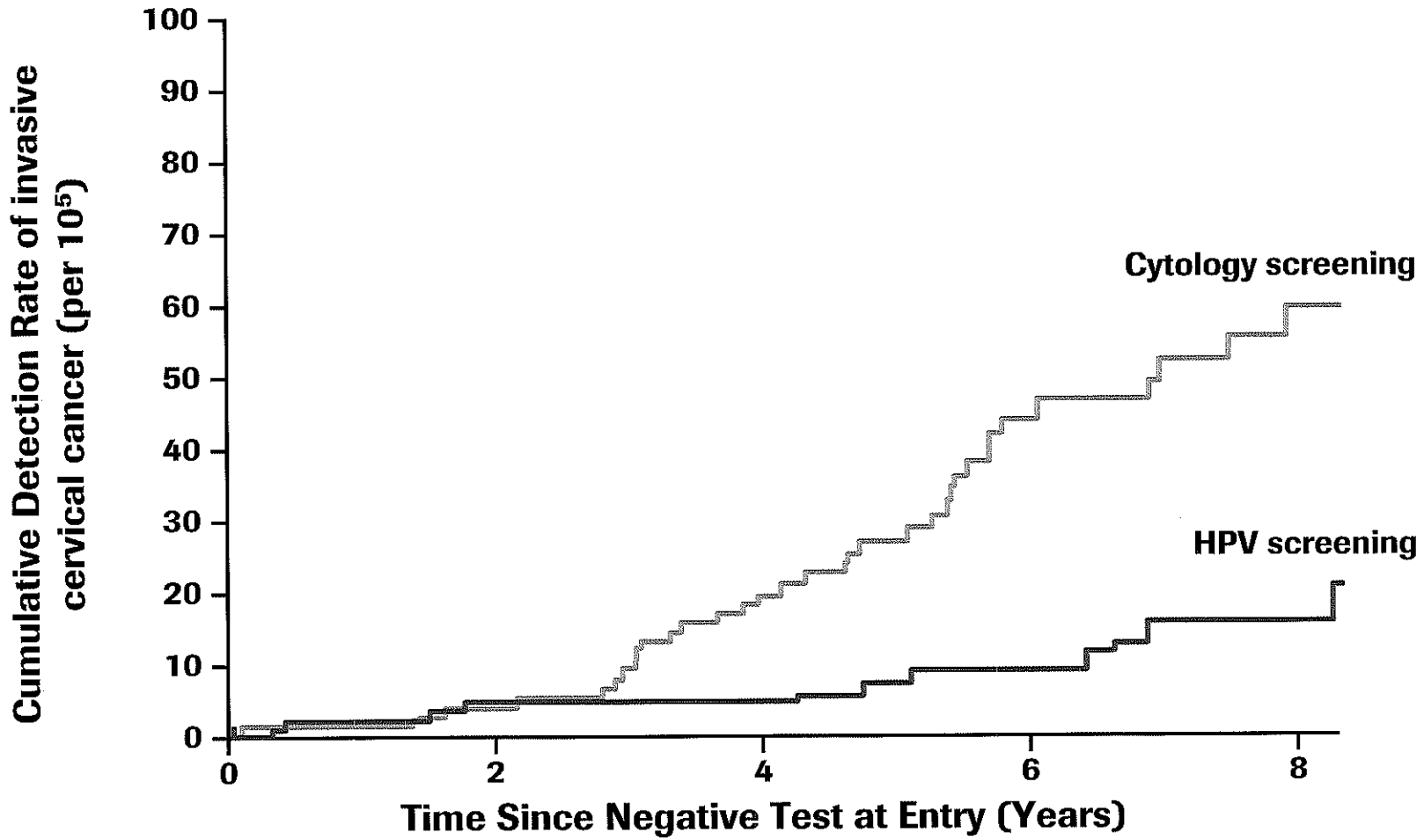
> 92%

Other: HPV35, HPV39, HPV51, HPV56, HPV59, HPV66, HPV68 (7.9%)

Crow (2012). Nature Outlook

HPV DNA testing reduces incidence of cervical cancer

HPV DNA-based cervical screening provides 60–70% greater protection against invasive cancer compared with cytology-based screening[1]



1. Ronco et al. (2013). Lancet

Long-term follow-up of 176,464 women aged 20-64 from 4 randomized European trials; women with negative test at entry

Conclusions

Cervical cancer is preventable with a combined strategy of vaccination, effective screening, and appropriate follow-up

Evidence based screening recommendations highlight the use of HPV testing as part of effective screening strategies

Screening rates need to increase to achieve Healthy People 2020 goal of 93%

- Identify and implement the most cost effective screening options
- Educate physicians and other health care providers

The State of Cervical Cancer Policy in Arizona

Feb. 23, 2016

Brian Hummell, AZ Director of Govt. Relations
Brian.hummell@cancer.org

Cancer burden in Arizona

According to ACS *Cancer Facts & Figures 2016*

32,510 Arizonans will be diagnosed with new cancers in 2016

- 4,900 Breast (Female)
- 3,150 Prostate
- 3,980 Lung
- 2,550 Colon & rectum
- 1,630 Urinary Bladder
- 1,510 Melanoma of the skin
- 1,300 Non-Hodgkin Lymphoma
- 1,160 Leukemia
- 1,060 Uterine Corpus
- 230 Uterine Cervix

Cervical Cancer Causation

Nearly all cases of cervical cancer are caused by infection with high-risk types of human papilloma virus (HPV). The virus also has been linked to cancers of the vagina, vulva, anus, penis, and throat.

- The American Cancer Society recommends HPV vaccination at ages 11 to 12.

HPV Vaccination Rates

- HPV vaccination is underutilized despite the overwhelming evidence for its safety and effectiveness
- While vaccination rates continue to improve for other adolescent vaccines, HPV vaccination rates have not
- Vaccination rates are lowest where cervical cancer rates are highest
- AZ rates:
  - HPV Immunization Rates - males – 21%
  - HPV Immunization Rates – females – 31%

National HPV Vaccination Roundtable

The National HPV Vaccination Roundtable, established by the ACS and CDC in 2014, is a national coalition of public organizations, private organizations, voluntary organizations, and invited individuals dedicated to reducing the incidence of and mortality from HPV-associated cancer in the U.S., through coordinated leadership and strategic planning.

HVP Roundtable Goals

The ultimate goal of the Roundtable is to reduce the number of HPV-associated cancers and cervical precancerous lesions as well as non-cancer outcomes through:

- Clinician recommendations for HPV vaccine
- decreasing missed opportunities for HPV vaccine administration
- increased HPV vaccination rates at national and state levels, with a focus on girls and boys ages 11-12.

Cancer Prevention and Control Updates

Virginia Warren
Cancer Prevention and Control
Office Chief

Cancer Math

- 209 Arizonans die each week
  - 10,881 in 2012
- 30 per day
- All ages, races
- Equal Opportunity disease
- Risk increases with age

Top 5 *Diagnosed* Invasive Cancer Sites 2011 Data

- Female Breast: 4,093
- Lung and Bronchus: 3,793
- Prostate: 2,905
- Colorectal: 2,451
- Bladder: 1,440

Top 5 Sites of Cancer *Mortality* 2012 Data

- Lung and Bronchus: 2,770
- Colorectal: 938
- Pancreas: 817
- Female Breast: 742
- Prostate: 578

Well Woman HealthCheck Program 2015

- Women Screened – 5,620
- Services Provided – 17,319
- Women Case Managed – 1,542
- Case Management – abnormal results and rarely or never screened women

Breast and Cervical Cancer Treatment Program

- WWHP Referrals into the program
  - 120 per year
- Community Referrals into the program
  - 315 since August 2012

Program Focus Today

- Increase screening rates for all Arizonans
- Teach clinic operations staff evidence based strategies to increase screening rates; breast, cervical and colorectal cancer
- Working with health plans, teaching them how to increase cancer screening rates

Screening Rates

- Health Plan X –
  - Breast – 47.3%
  - Cervical – 32.9%
  - Colorectal – 34.5%
- FQHCs
  - Breast – 48%
  - Cervical – 48%
  - Colorectal – 30%

Targets
HP2020 – 81.1%
HP2020 – 93%
HP2020 – 70.5%
Healthy People 2020

Thank You

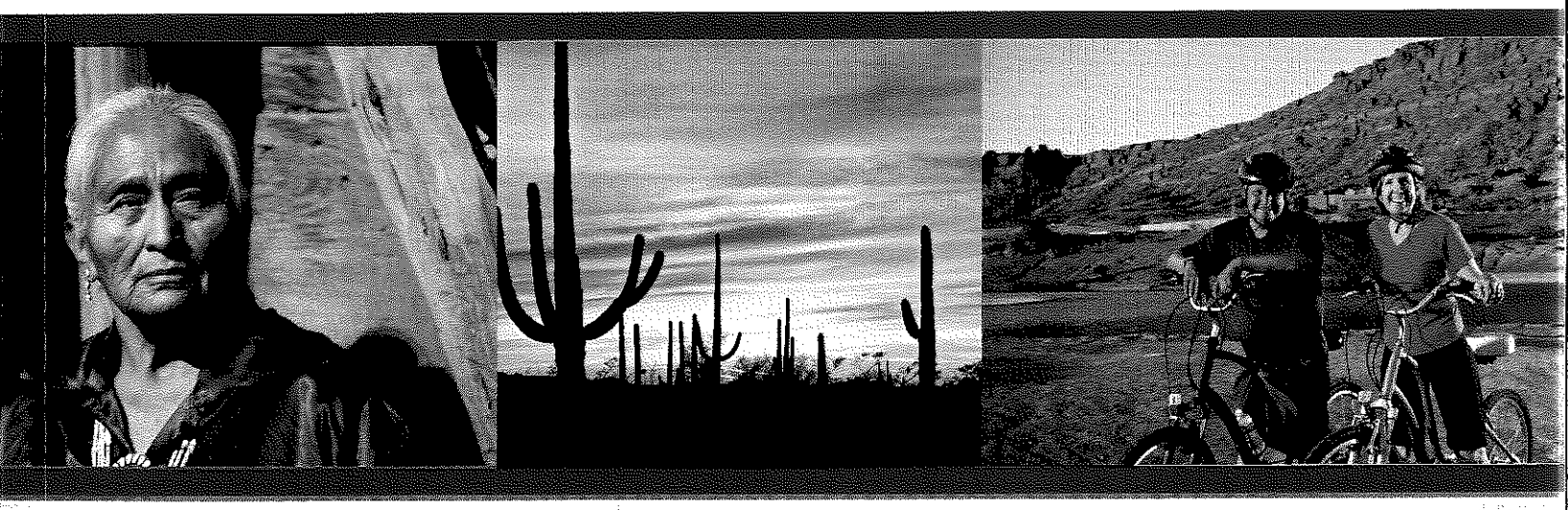
- Website: WellWomanHealthCheck.org
- Arizona Cancer Control Plan
- Colorectal Cancer in Arizona

Contact Information:

- Virginia.warren@azdhs.gov
- 602-542-1222

arizona **cancer control plan**

2014—2018



Arizonans
will live longer

ARIZONA
CANCER
COALITION

Dear Arizonans,

Too many Arizonans die from cancer. In fact, cancer is the leading cause of death in Arizona. The pain and loss is felt by individuals, families, and our community at large.

The spirit of collaboration is strong in Arizona. In 2007, the Arizona Cancer Coalition (ACC) published the first Arizona Cancer Control Plan to act as a guide for our state's cancer control efforts. In 2013, the ACC convened a dedicated group of individuals representing governments, businesses, healthcare, research and non-profit organizations to revisit and reprioritize our cancer control plan. This collection of content experts and community stakeholders sought to advance the work accomplished in 2007 with a new vision of how to affect change at a more comprehensive level.

The **Arizona Cancer Control Plan 2014 – 2018** incorporates what we have learned in our collaborative efforts to reduce the burden of cancer so that Arizonans will live longer. We identified objectives, indicators and targets to drive collective action and address cancer holistically by addressing all aspects of the cancer continuum: prevention, early detection, diagnosis and treatment, quality of life, and cancer research.

The objectives, indicators, and targets in the Arizona Cancer Control Plan 2014 – 2018 serve as the foundation for the Arizona Cancer Coalition (ACC). The plan guides the six Action Teams within the ACC to identify strategies to better coordinate, collaborate, and integrate collective impact efforts in the years to come. Our goal is to provide a roadmap focused on improving the systems and policies that prevent disease, improve the care of our loved ones, and ultimately, that protect life.

We are grateful to those individuals whose hard work is reflected in this document. We would not be here without the pioneering steps taken to reduce Arizona's cancer burden in 2007. The Arizona Cancer Coalition would not have survived without the loyalty and dedication of our members. We are thankful for the leadership and courage of our partners – it is only through our shared vision that a cancer-free Arizona can become a reality.

Sincerely,

Sharlene R. Bozack

Sharlene Bozack
Arizona Cancer Coalition Chair
Chief Government Relations Officer
American Cancer Society-Cancer Action Network

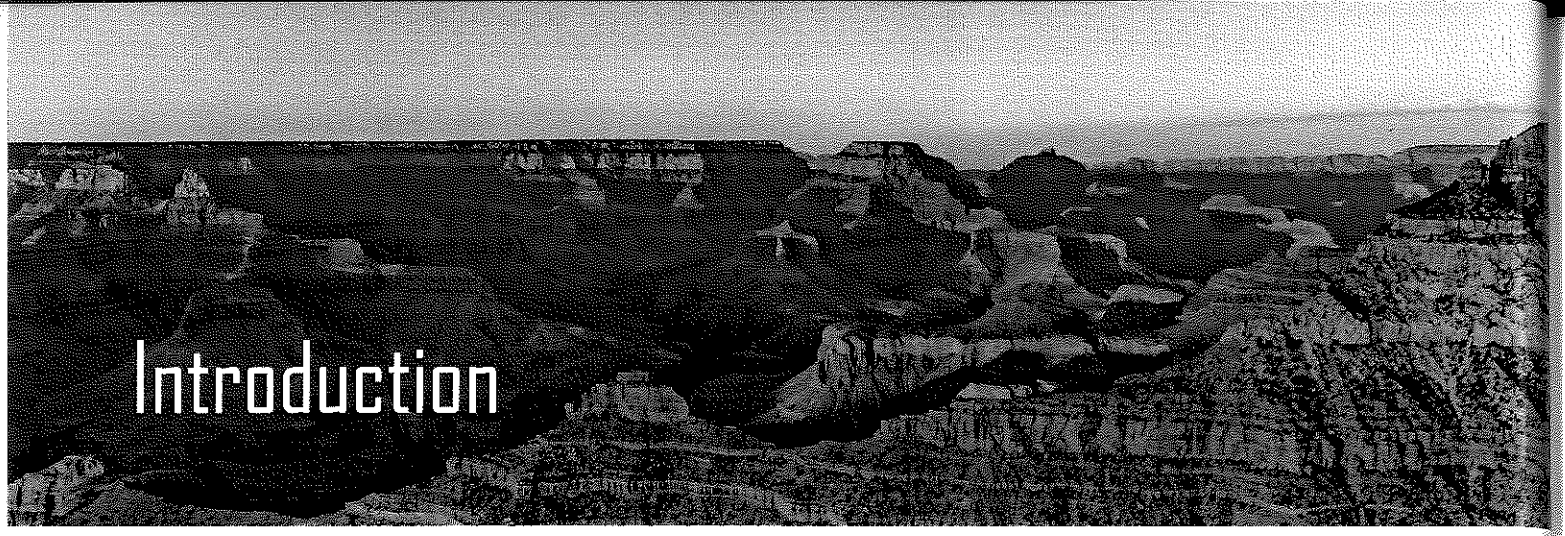
R. A. Mesa, MD

Ruben A. Mesa, MD, FACP
Arizona Cancer Coalition Co-Chair
Consultant Hematologist, Mayo Clinic in Arizona
Chair, Division of Hematology & Medical Oncology
Deputy Director, Mayo Clinic Cancer Center

arizona cancer control plan

2014—2018

Contents



Introduction

Purpose

Arizona has a cancer problem. Cancer is the leading cause of death in Arizona. Approximately 28,385 Arizonans are diagnosed with cancer each year and 209 Arizonans die each week from cancer. In 2012, 10,881 Arizonans lost their lives to cancer.

The *Arizona Cancer Control Plan 2014-2018* is an update to the original plan – it provides a framework for taking action to help Arizonans live longer. The overall goal of this plan is to reduce the burden of cancer in Arizona. The initial Arizona Cancer Control Plan was published in 2007. While that plan met goals and priorities specific to 2007-2012, the needs and health problems of communities across our state have changed.

Process of Development

The Arizona Department of Health Services brought together a large group of stakeholders in June of 2013. This stakeholder group was comprised of decision makers and leaders from many health care organizations in Arizona, including hospitals, clinics, federally qualified health centers (FQHCs), cancer research centers, and tribes. Stakeholders were provided with a clear view of the state of cancer in Arizona and its challenges regarding cancer screening, prevention, and treatment. This group of stakeholders has collectively become the Arizona Cancer Coalition (ACC).

The stakeholders prioritized areas of action for the plan around six primary goals that address the continuum of cancer care:

- ⇒ Policy;
- ⇒ Prevent cancer;
- ⇒ Detect cancer early;
- ⇒ Elevate cancer treatment;
- ⇒ Galvanize Quality of Life (QoL) survivorship care networks; and
- ⇒ Catalyze research.

Process of Development (cont.)

Small groups of ACC stakeholders formed into "Action Teams," or work groups, dedicated to each of the six goals. Specific objectives and measures for tracking progress were systematically developed. These strategies are presented in this document.

The Action Teams submitted their objectives to the ACC Steering Committee and continue to meet and refine their objectives and measures. Each Action Team uses evidence based-strategies and best practices to reduce the burden of cancer. The goals and objectives will continually be revised as the needs of the environment and community change.

This five-year plan provides the community, in the broadest sense of that term, with a clear description of the cancer problem and the steps that can be taken to reduce the impact of cancer in Arizona. Several cross-cutting sets of strategies, addressing research, policy work, and targeted cancers like melanoma have been added to this plan. The intent is that this document can be accessible and reviewed by members of the community, health care providers, and public health professionals in order to provide an update about the work being done within the Action Teams of the ACC to fight cancer in Arizona. It also serves as an invitation; if you or your organization wish to join us in this work, please let us know.

Focus on Policy, Systems and Environmental Change

Until recently, many traditional health programs and plans focused on changing individual behavior. Achieving health, however, goes beyond individual choices. It is clear that is not enough to know how to be healthy or to teach an individual what healthy choices are; concrete, easily accessible healthy options are needed in order for real change to occur. That is where policy, system and environmental change come in.

Policy, systems and environmental (PSE) changes make it inherently easier for individuals to adopt healthier choices than to choose unhealthy options. By changing policies, systems and/or environments, communities can have larger impacts on health issues such as cancer and other chronic diseases with a relatively small investment of time and resources.

The Arizona Department of Health Services (ADHS) has partnered with several ACC member organizations to implement highly successful PSE strategies. The expansion of Arizona's Breast and Cervical Cancer Treatment Program is one of the largest recent policy changes resulting from a strong partnership among ADHS, the American Cancer Society Cancer Action Network, and the Susan G. Komen Foundation. The expansion allows all women meeting the eligibility requirements for the Well Women HealthCheck Program (WWHP) to receive treatment through the Arizona Health Care Cost Containment System (AHCCCS). Prior to its expansion, only women who were screened through the WWHP qualified for treatment. During the first year of the expansion, 145 uninsured women diagnosed with breast or cervical cancer were enrolled in AHCCCS. This has truly helped reduce the burden of cancer in Arizona.

Several systems changes are currently taking place throughout community health centers and clinics in Arizona. For example, it is becoming routine practice for community health centers throughout the state to pull and analyze cancer screening baselines for their facilities. Community health centers and clinics that are contractors with the ADHS HealthCheck program are required to track and report on their screening baselines annually. In addition, ADHS contracted with Health Services Advisory Group to assist these health centers improve utilization of their electronic health records (EHR). Health Services Advisory Group assessed each clinic's use of their EHR and provided technical assistance to increase the capture of meaningful data in the EHR.

Given the high efficacy and sustainability of PSE strategies, the ACC and its Action Teams focus their efforts heavily on strategies and interventions that result in policy, systems and environmental change.

Social Determinants of Health and Health Equity

Social determinants of health are factors that involve the influence of the environment, community, and neighborhood someone lives in, the food they eat and have access to, the medical care they have access to and utilize, the level of education they are able to obtain, and the jobs they are hired for. These elements of an individual's life affect their overall health status, quality of life, and life expectancy – it drives what opportunities they encounter, diseases they have, how they live, and how they die.

Health risk factors are drivers for disease – they are either inherited or adopted. Family health history can impact what diseases repeat themselves and are consistent among family members. Understanding one's family history and actively pursuing genetic testing are ways to understand inherited health risk factors and potentially taking action to alter them. For example, for families with the presence of the *BRCA1* and *BRCA2* gene mutation, genetic testing for breast and ovarian cancer can be the most cost effective approach to cancer prevention, even over the use of screening technology such as mammograms.[1]

> *"To be effective and sustainable, interventions that aim to redress inequities must typically go beyond remedying a particular health inequality and also help empower the group in question through systemic changes, such as law reform or changes in economic or social relationships."*[3]
>
> - World Health Organization

Adopted health risk factors include behaviors such as smoking, inactivity, and poor diet. These behaviors negatively influence an individual's health.[2] Tobacco use is a primary risk factor for many cancers. An objective of the Arizona Cancer Coalition is to prevent tobacco use among youth; to prevent them from adopting this behavior is another first step in cancer prevention.

However, understanding social determinants of health is only one sphere in reducing the impact of cancer. Health equity, the ability for every person in a population to fully achieve their greatest level of health and well-being, can be achieved when no one is disproportionately impacted and disadvantaged by their social determinants of health. Multi-level approaches optimizing health equity are crucial to addressing the burden of cancer in Arizona and needed to effectively improve outcomes for *all* patients.

Arizona targets populations at risk through resources available within the Health Disparities Center at the Arizona Department of Health Services. The Health Disparities Center participates on the Core Team, a collaborative group of leaders from programs within the Arizona Department of Health Services and their key partners, as well as the Arizona Cancer Coalition. The Health Disparities Center works to identify inequities among groups in Arizona by monitoring data, provides support and linkages among community partners and stakeholders, offers health literacy technical assistance, and provides health policy support.

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[1]Rubinstein, W. S., Jiang, H., Dellefave, L., Rademaker, A.W. (2009). Cost-effectiveness of population-based *BRCA1/2* testing and ovarian cancer prevention for Ashkenazi Jews: A call for dialogue. *Genetics in Medicine, 11* (9). Retrieved from http://www.nature.com/gim/journal/v11/n9/pdf/gim200994a.pdf

[2]Centers for Disease Control and Prevention. (2013). *Chronic Disease Prevention and Health Promotion: Health Equity*. Retrieved from http://www.cdc.gov/chronicdisease/healthequity/

[3]World Health Organization. (2014). *Health Systems: Equity.* Retrieved from http://www.who.int/healthsystems/topics/equity/en/

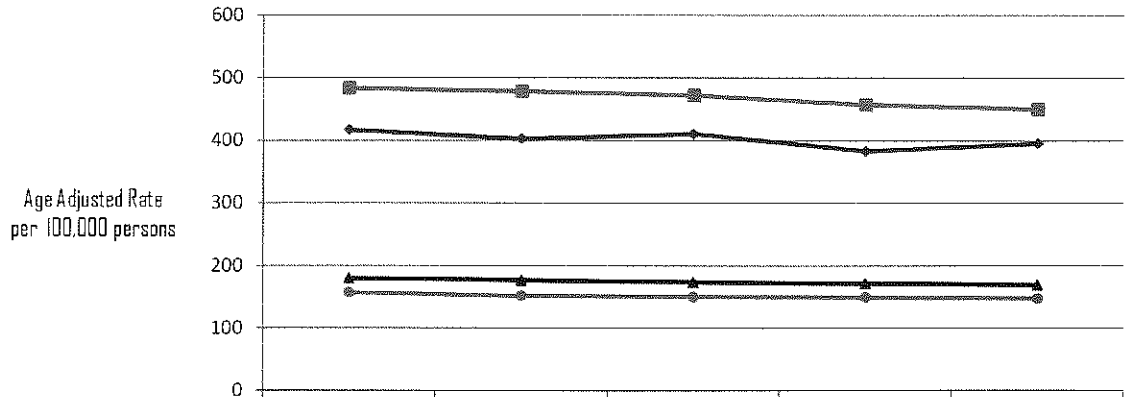
Arizona's Cancer Burden

In 2011, 586 Arizonans were newly diagnosed with cancer each week.[1] A look at the latest Arizona mortality data shows 209 Arizonans died of cancer each week in 2012.[2] Arizona's cancer incidence and mortality rates are lower than the national rates in the United States. Although the state rates are lower than national rates, it is evident that Arizona's cancer burden is immense.

The Arizona age-adjusted incidence rate was 395.2 per 100,000 persons in 2011, a 5% decrease from 2007 to 2011. Arizona's age-adjusted mortality rate was 147 per 100,000 persons in 2011, a 6% decrease, as illustrated below.

To view further details on incidence and mortality rates displayed by cancer type, please visit the Arizona Cancer Registry Data 2000—2010 report.

Comparison of Arizona and U.S.[3,4] Age-Adjusted Incidence and Mortality Rates of all Invasive Cancer, 2007 — 2011



	2007	2008	2009	2010	2011
Arizona Incidence	416.8	402.4	410.3	382.9	395.2
U.S. Incidence	483.1	478.1	471.8	457	450
Arizona Mortality	156.7	151.5	150.3	149.5	147
U.S. Mortality	179.4	176.4	173.5	171.6	168.6

[1]Arizona Cancer Registry, Arizona Department of Health Services. Retrieved July 30, 2014. Note: All Arizona incidence data from the Arizona Cancer Registry.

[2]Arizona Department of Health Services, *Arizona Health Status and Vital Statistics, 2012.* Note: All Arizona mortality data from Arizona Vital Statistics.

[3] NAACCR age adjusted incidence rates: NAACCR Fast Stats 2007-2011. North American Association of Central Cancer Registries; Based on data submitted December, 2013; 2014. Accessed at http://faststats.naaccr.org/selections.php?series=cancer on July 10, 2014.

[4]United States Cancer Statistics: 1999 - 2010 Mortality Incidence Rate Ratios, WONDER Online Database. United States Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; 2014. Accessed at http://wonder.cdc.gov/CancerMIR-v2010.html on Aug 8, 2014 and http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_06.pdf

Cancer Incidence and Mortality Data

In Arizona, 28,385 new invasive cancers and an additional 2,083 *in situ* cancers were diagnosed among residents in 2011. The total cancer incidence burden is 30,468 cancer cases diagnosed among Arizonans.

In 2012, there were 10,881 Arizonans who lost their lives to cancer.

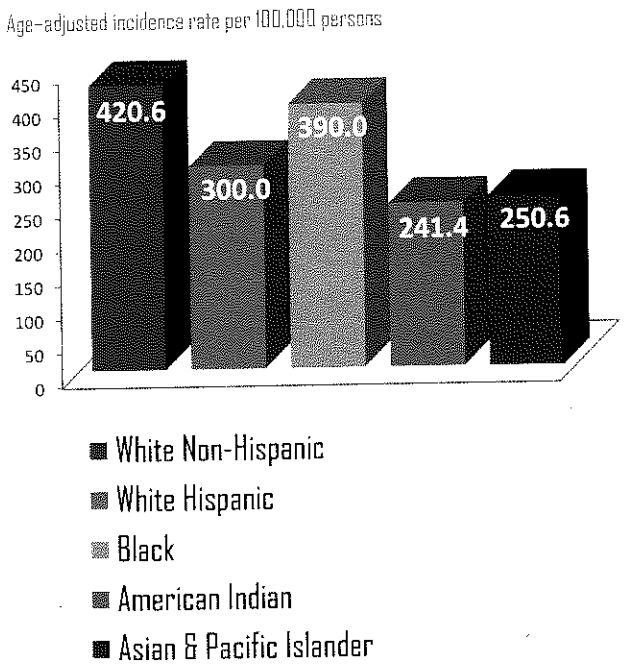
RACE/ETHNICITY

Different races and ethnicities are disproportionately affected by cancer. White non-Hispanic residents have the highest age-adjusted incidence rate followed by blacks.

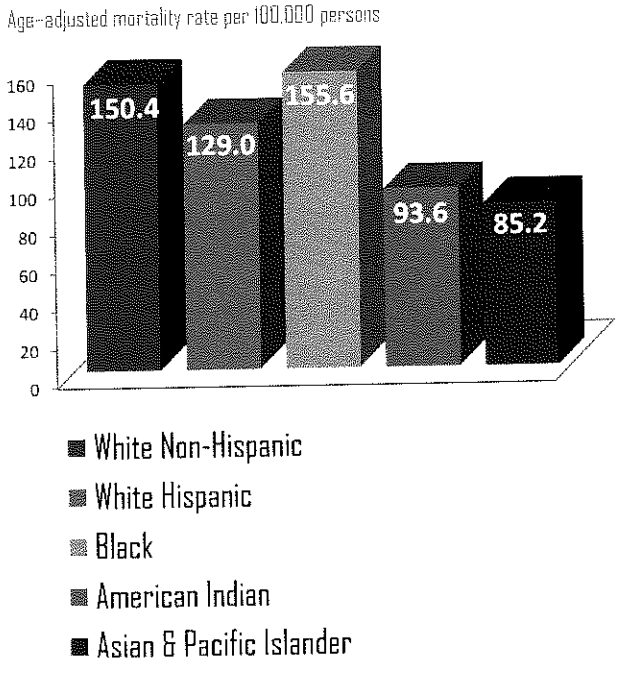
Age-adjusted mortality rates are highest among black Arizonans followed by white non-Hispanics.

Age-adjustment is a process used to compare incidence and mortality rates over time or among geographic areas or populations that have different age distributions. Because most disease rates increase with age, age-adjustment eliminates the confounding effect of age when comparing rates. Cancer incidence and mortality is usually expressed in the number of new cases or deaths per 100,000 persons in a population.

Age-Adjusted **Incidence** Rate by Race/Ethnicity – 2011



Age-Adjusted **Mortality** Rate by Race/Ethnicity – 2012



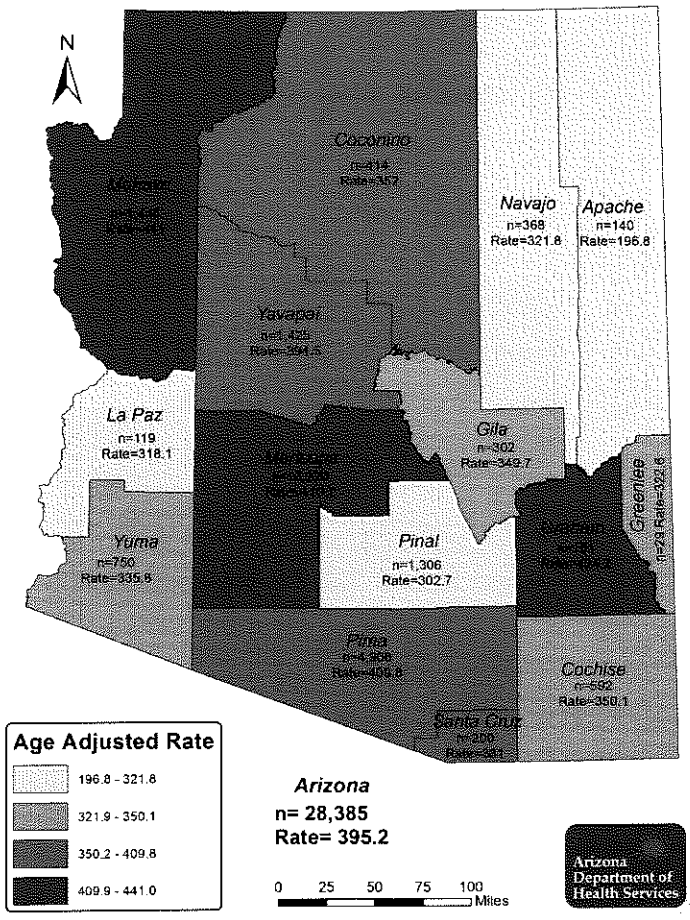
Arizona Cancer Registry Facts and Figures (cont.)

DEMOGRAPHICS

In 2011 Mohave County had the highest incidence rate of cancer (441 per 100,000) while Apache County had the lowest rate (196.8 per 100,000).

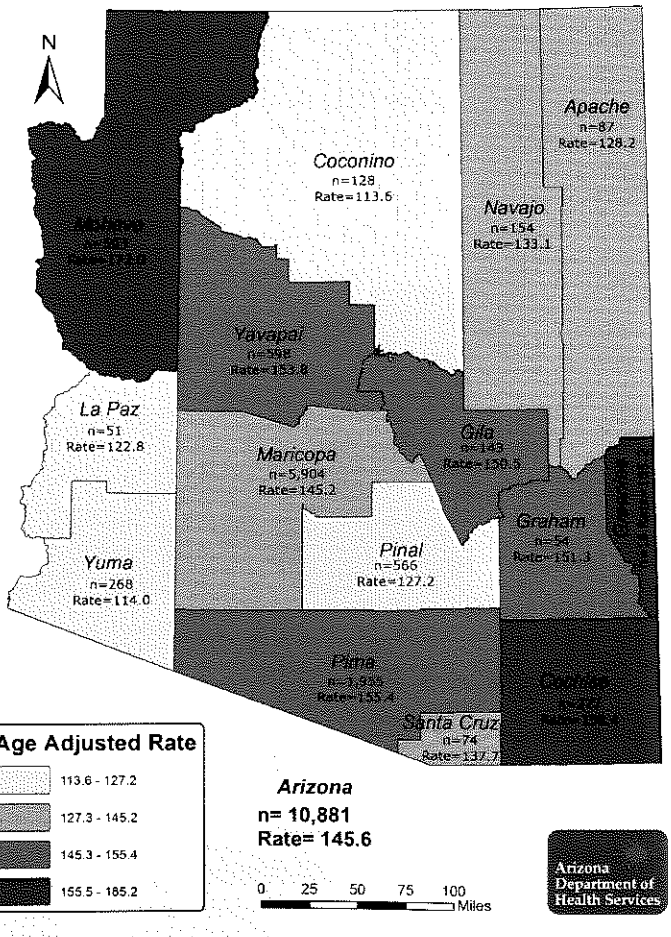
Greenlee County had the highest mortality rate of cancer (185.2 per 100,000) while Coconino County had the lowest rate (113.6 per 100,000) during 2012.

Invasive Cancer **Incidence** 2011 Annual Count and Age-Adjusted Rate by County*



* 16 cancer incidence cases had an unknown county of residence

Cancer **Mortality** 2012 Annual Count and Age-Adjusted Rate by County*



* 13 cancer deaths had an unknown county of residence

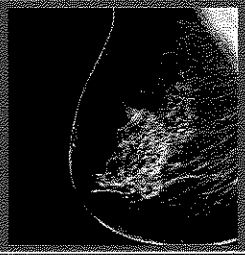
LEADING CANCER TYPES

The most frequently diagnosed invasive cancer among all Arizonans is female breast cancer (4,093 cases) followed by lung and bronchus (3,793), prostate (2,905), colorectal (2,451), and bladder (1,440).

The top invasive cancer site among males is prostate (2,905) followed by lung and bronchus (1,951). The most frequently diagnosed invasive cancer site for females is breast (4,093) followed by lung and bronchus (1,842).

The leading cause of cancer death for both males and females in 2012 was lung and bronchus (2,770). Among males, the second leading cause of cancer death in 2012 was prostate (578), followed by colorectal (521), pancreas (453), and liver (302). The second leading cause of cancer death among females in 2012 was female breast cancer (742), followed by colorectal (417), pancreas (364), and ovarian (298).

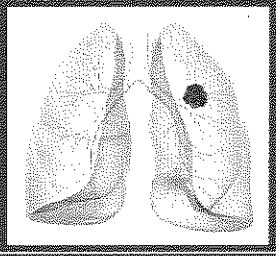
In the U.S., men have a 1 in 2 lifetime risk of developing invasive cancer and women have a 1 in 3 lifetime risk.[5]



TOP 5

DIAGNOSED INVASIVE CANCER SITES
(CASE COUNTS)

Female Breast	4,093
Lung and Bronchus	3,793
Prostate	2,905
Colorectal	2,451
Bladder	1,440



TOP 5

SITES OF CANCER MORTALITY
(CASE COUNTS)

Lung and Bronchus	2,770
Colorectal	938
Pancreas	817
Female Breast	742
Prostate	578

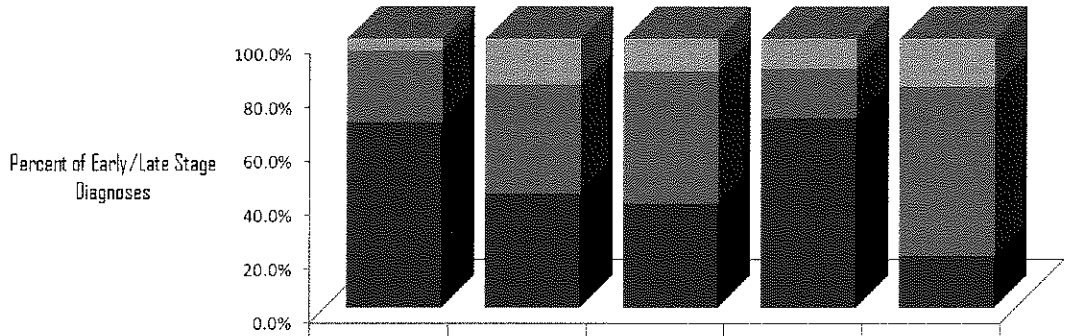
[5]American Cancer Society. *Cancer Facts & Figures 2014.* Atlanta: American Cancer Society; 2014.

STAGING

Summary stage is the most basic way of categorizing how far a cancer has spread from its point of origin.[6] Early stage combines persons diagnosed at in situ and local stage. Late stage combines persons diagnosed at regional and distant stage.

In Arizona, breast, prostate, and cervical cancer continue to be diagnosed in early stages while lung and colorectal cancer continue to be diagnosed at higher rates in late stages. Different races/ethnicities are disproportionately impacted by late stage diagnoses. For more information, please visit the Arizona Cancer Registry Data 2000—2009 report.

Early/Late Stage* for Selected Cancer Sites in 2011



	Female Breast	Cervix**	Colorectal	Prostate	Lung
Unknown Stage	4.5%	17.2%	12.2%	11.2%	17.9%
Late Stage	26.6%	40.4%	49.1%	18.3%	62.9%
Early Stage	68.8%	42.4%	38.7%	70.4%	19.1%

* Early Stage = In Situ and Local Stage; Late Stage = Regional and Distant using SEER Summary Stage
** Cervical Cancer Early Stage includes Local Stage Only

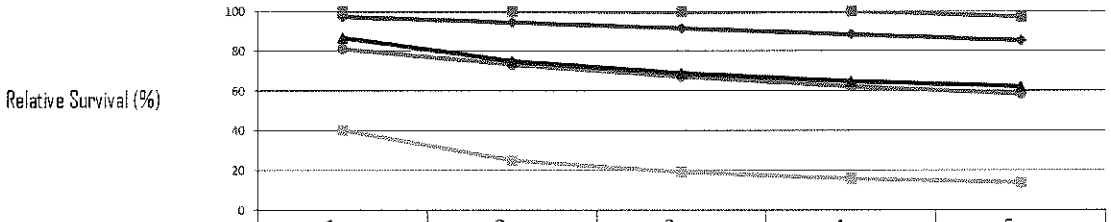
[6] Young JL Jr, Roffers SD, Ries LAG, Fritz AG, Hurlbut AA (eds). SEER Summary Staging Manual – 2000: Codes and Coding Instructions, National Cancer Institute, NIH Pub. No. 01-4969, Bethesda, MD, 2001.

SURVIVAL

In 2014, the American Cancer Society estimates that Arizona will have 348,720 cancer survivors (5.3% of state residents) while the U.S. will have 14,483,830 cancer survivors (4.6% of the U.S. population).[7]

Stage of disease is an indicator used to measure length of survival. The figure below depicts Arizonans diagnosed from 1995 through 2008 by invasive cancer type compared to length of survival at various intervals.

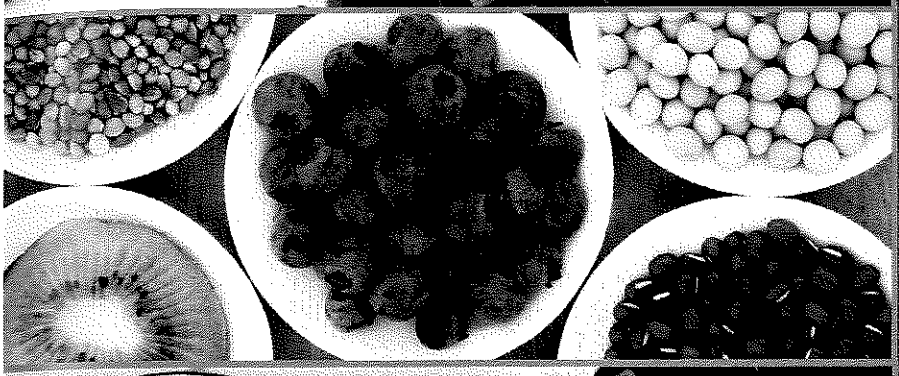
Five Year Relative Survival of Invasive Cancer of Female Breast, Colorectal Cancer, Lung, Prostate, and Cervix, 1995-2008

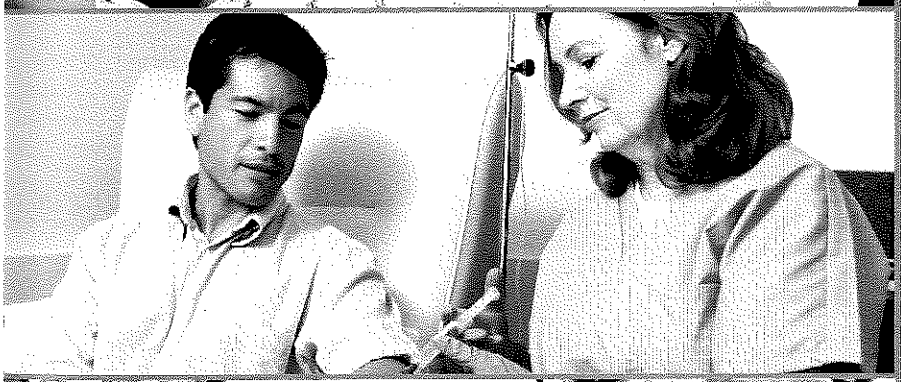


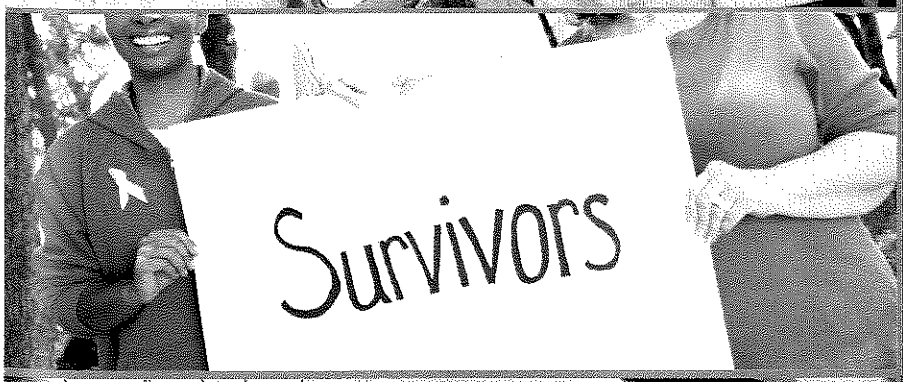
	1 yr	2 yr	3 yr	4 yr	5 yr
Female Breast	97.1	94.2	91.2	88.2	85.1
Colorectal	80.9	73	67	62	58.3
Lung	40.1	24.9	19.1	15.8	13.7
Prostate	99.9	99.8	99.5	99.8	97
Cervix	86.5	74.7	68.8	64.6	62

Years Survived After Year of Diagnosis

[7] American Cancer Society. *Cancer Treatment and Survivorship Facts & Figures 2014-2015.* Atlanta: American Cancer Society; 2014.







Goals

The Arizona Cancer Control Plan is based on six overarching goals addressing all aspects of the cancer continuum.

1. Policy
2. Prevent Cancer
3. Detect Cancer Early
4. Elevate Cancer Treatment
5. Galvanize Quality of Life/ Survivorship Care Networks
6. Catalyze Research

Policy Rationale

Broad and positive impacts on cancer control in Arizona have occurred through significant policy initiatives at the federal and state legislative levels.

The Arizona Cancer Coalition is composed of national and local organizations dedicated to cancer prevention, early detection, and access to high quality care and support for cancer survivors. The work of these agencies at the local level has supported the passage of several key pieces of legislation in our state that have impacted the burden of cancer in Arizona.

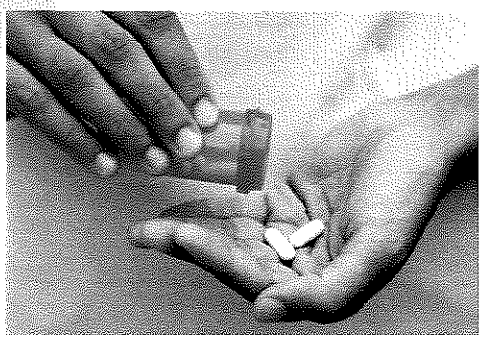
- ⇒ In 2014, unanimous passage of legislation providing cost parity for oral chemotherapy medications.
- ⇒ In 2013, restoration of the adult Medicaid population that had been frozen in budget cuts.
- ⇒ Expansion of Medicaid to 133% of the federal poverty level (FPL). Annual exams and cancer screenings are restored as a benefit to Medicaid recipients.
- ⇒ In 2012, passage of legislation that allows women to access breast and/or cervical cancer treatment through Medicaid regardless of where the diagnosis occurred (moving to Option 3 in the Breast and Cervical Cancer Treatment Program).
- ⇒ In 2008, passage of bipartisan legislation providing a full smoking cessation benefit to Medicaid recipients.

The Arizona Cancer Coalition Policy Action Team seeks to shape rules, regulations, and policies with input from organizations and communities, and to increase awareness of the positive impact policy change can have on health outcomes.

OBJECTIVE 1 Advocate for oral chemotherapy parity

INDICATORS

1.a. Enactment of oral chemotherapy parity legislation.



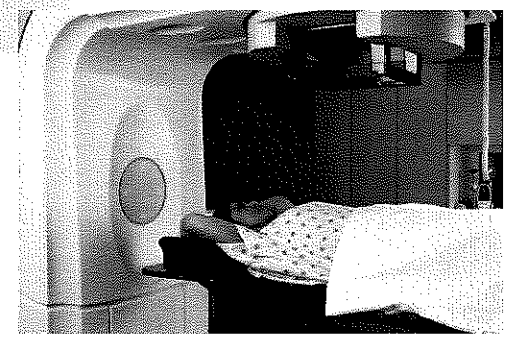
STATUS

Completed. The Fair Access to Cancer Treatment (FACT) Act was signed into law by Governor Brewer on April 30, 2014. Arizona joins 27 other states and the District of Columbia that have enacted oral chemotherapy access laws. The network of supporters who advocated for this bill recognized the severe gaps in oral chemotherapy coverage by insurance plans and the high cost associated with oral chemotherapy medication. The law will take effect January 1, 2016.

OBJECTIVE 2 Protect funding sources for existing cancer screening and treatment programs

INDICATORS

2.a. Maintenance of state-appropriated funds for the screening programs.



STATUS

Arizona has been a recognized leader in its cancer prevention programs. The Well Woman (WWHP) and the FIT at Fifty HealthCheck Programs (FFHP) provide screenings for low-income, uninsured residents. The WWHP is funded through a Centers for Disease and Control Prevention (CDC) grant and a state match. The Arizona Breast and Cervical Cancer Treatment Program was recently changed to allow greater access through a state appropriation and a federal Medicaid match.

OBJECTIVE 3 Create a statewide Tobacco Retail Registry

INDICATORS

3.a. Establishment of Tobacco Retail Registry in Arizona.

STATUS

Arizona is one of a very few states that has no license or registry of retailers who sell tobacco. Enforcement of tobacco laws without known retail locations to support enforcement may lead to easier access by youth to tobacco products and potential lost revenue to the state.

OBJECTIVE 4 Establish state-appropriated funds for colorectal cancer screening and treatment

INDICATORS

4.a. State-appropriated funds allocated to FIT at Fifty HealthCheck Program.

STATUS

Arizona is one of 25 states and four tribes that receives a federal grant to screen uninsured residents 50 years or older for colorectal cancer. However, screening by the program is not permitted for symptomatic patients. In addition, treatment for those diagnosed with colorectal cancer through the program is currently covered through an annual grant to the state from the Colon Cancer Alliance.

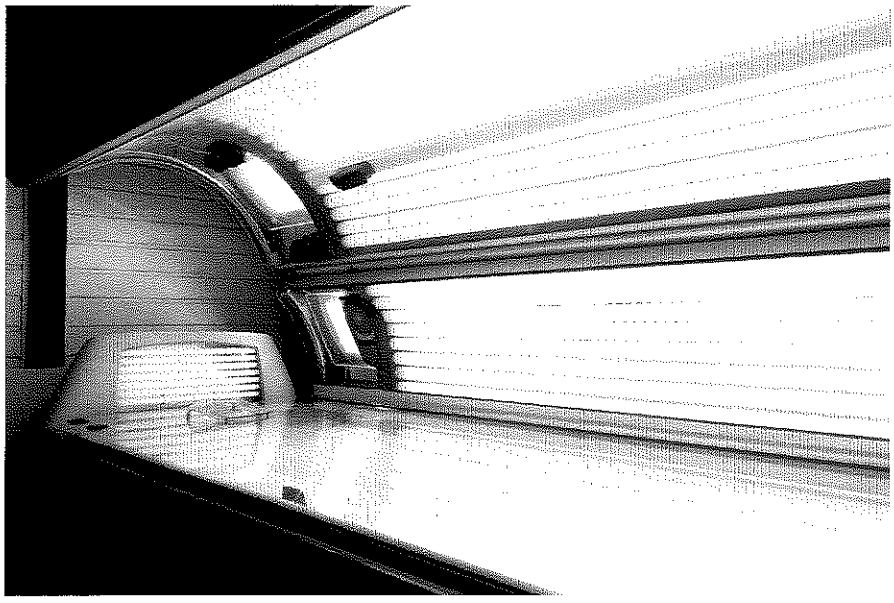
OBJECTIVE 5 Prohibit the use of indoor tanning devices by minors

INDICATORS

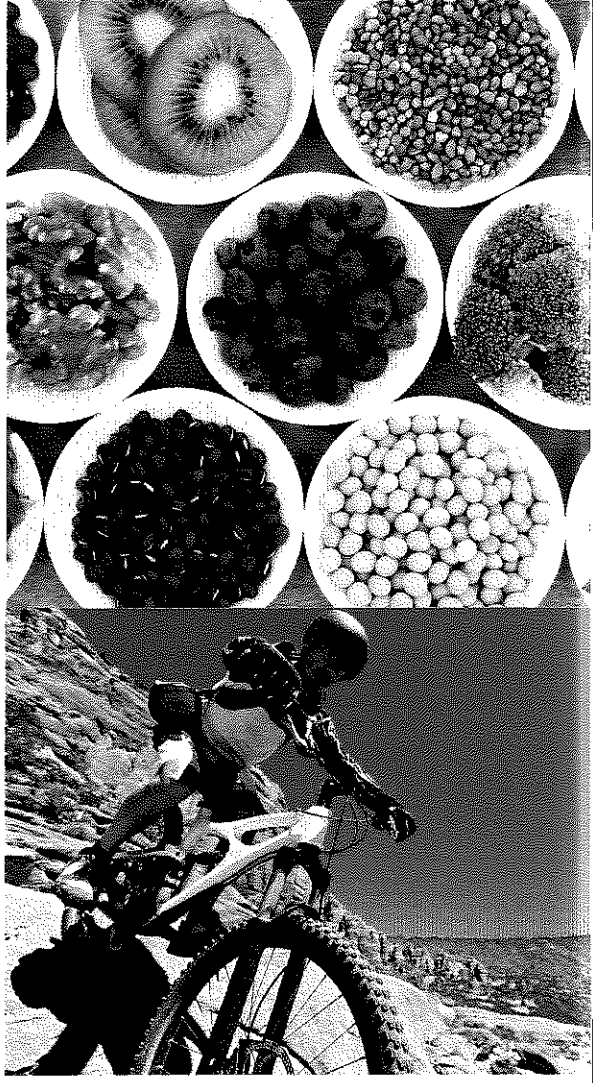
5.a. Creation of statewide policy to ban the use of indoor tanning devices by Arizona minors.

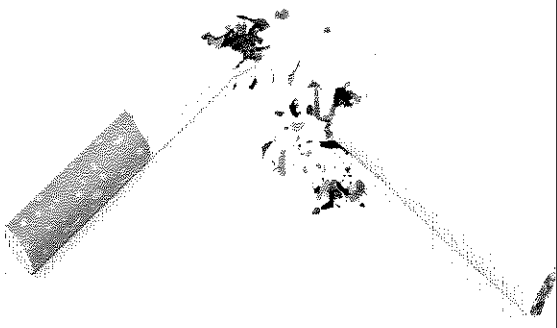
STATUS

Melanoma is one of the most common, but also easily prevented, cancers. Use of indoor tanning devices by youth has been shown to dramatically increase the risk of developing melanoma. Following the recent FDA requirement of a "black box" warning on indoor tanning devices, the Policy Action Team seeks to prohibit the use of these devices by minors in Arizona.



Goal 2: Prevent Cancer





Prevention Rationale

Cancer prevention is multifaceted. According to the American Cancer Society, more than half of cancers can be prevented through healthy lifestyle choices.[1]

In addition to the adoption of healthy lifestyles, vaccines against Hepatitis B (HepB) and Human Papilloma Virus (HPV) are known to prevent conditions that may lead to cancer.[2] The birth dose of HepB vaccine and Arizona school requirements for HepB vaccination have facilitated broad coverage of this cancer prevention vaccine. Approximately 98 percent of Arizona's sixth graders were fully immunized against HepB in 2013-2014.[3]

However, the 2014 Arizona coverage for complete HPV vaccination of females ages 13-17 years old is only 37 percent. This coverage rate leaves nearly two-thirds of Arizona adolescent females at risk to acquire HPV, putting them at further risk to develop cervical cancer later in life.[4]

Based on the broad evidence related to healthy lifestyle choices and the need to increase HPV vaccination coverage in Arizona, the Arizona Cancer Control Plan focuses on reducing the burden of disease through the following objectives:

- ⇒ Reduce the prevalence of smoking and smokeless tobacco use among youth
- ⇒ Increase the HPV vaccine completion rate among youth
- ⇒ Promote healthy nutrition and lifestyle among Arizonans
- ⇒ Decrease skin cancer by reducing sun exposure

The Arizona Cancer Coalition Prevention Action Team is dedicated to cancer prevention through sharing consistent cancer prevention messages, reducing silos among agencies, and building upon shared values of health promotion across disciplines. Current workgroup activities include, but are not limited to: promotion of the Arizona's Smokers' Hotline (ASHLine); educational outreach surrounding tobacco cessation benefits under the Affordable Care Act; advancement of an Arizona-wide campaign, "Protect Me With 3," an effort to normalize HPV vaccination as a routine adolescent vaccine; and dissemination of information across disciplines surrounding sun safe educational offerings and events. The Prevention Action Team is actively pursuing partners working in the healthy lifestyles areas of nutrition and exercise.

[1] American Cancer Society (2014). *Make healthy lifestyle choices*. Retrieved from http://www.cancer.org/healthy/index
[2] National Cancer Institute (2014). *Cancer vaccines*. Retrieved from http://www.cancer.gov/cancertopics/factsheet/Therapy/cancer-vaccines
[3] Arizona Department of Health Services (2014). *Arizona sixth grade coverage levels*. Retrieved from http://www.azdhs.gov/phs/immunization/documents/statistics-reports/sixth-grade-coverage-2013-2014.pdf
[4] Arizona Vaccine News (June, 2014). Human Papillomavirus (HPV) and HPV vaccination issue. Retrieved from http://www.azdhs.gov/phs/immunization/documents/newsletters/vaccine-news/2014/az-vaccine-news-06-13-14.pdf

Goal 2: Prevent Cancer

OBJECTIVE 1 Reduce the prevalence of smoking and smokeless tobacco use among youth (ages 12-17 yrs.)

INDICATORS

1.a. Percent of youth who report tobacco use in the last 30 days.

1.b. Percent of teens who report ever using tobacco.

STATUS

Seven percent of middle school students in 6th-8th grade reported using tobacco in the last 30 days.

About 22 percent of middle school-aged students reported *ever* using tobacco.[1]

[1]Bureau of Tobacco and Chronic Disease, Arizona Department of Health Services (2013). *Arizona Youth Tobacco Survey 2013 Report. Retrieved from http://azdhs.gov/tobaccofreeaz/reports/pdf/az-youth-tobacco-survey-report-2013.pdf*

OBJECTIVE 2 Increase the immunization rate with 3-dose series CDC recommended HPV vaccinations among youth (ages 13-17 yrs.)

INDICATORS

2.a. Number of children who have completed the HPV vaccination series.

STATUS

The HPV vaccine is recommended for adolescent males and females ages 11 and 12 years old, and is appropriate for youth up to 26 years of age. Three doses of the vaccine are required. Of females ages 13 - 17 years old, 37 percent reported that they completed the 3-dose HPV vaccine series. Twenty percent of males 13-17 years old reported that they completed one or more doses of the series.[2]

[2] Centers for Disease Control and Prevention. (2013). *2012 NIS-Teen Vaccination Coverage Table Data.* Retrieved from http://www.cdc.gov/vaccines/imz-managers/coverage/nis/teen/tables/12/tab01_iap_2012.pdf

OBJECTIVE 3 Promote healthy nutrition among Arizonans through education, media campaigns and incentives

INDICATORS

3.a. Number of school lunch programs.

3.b. Number of children and adults who have been diagnosed as obese.

STATUS

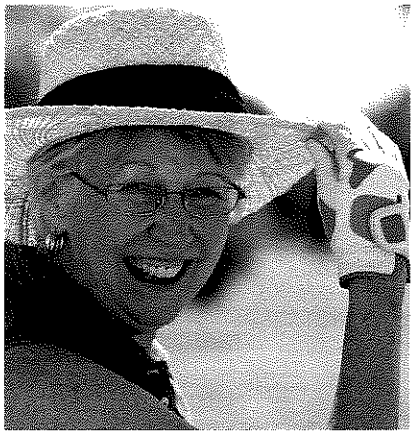
In 2011, nearly 17 percent of Arizona children aged 2-19 years old were diagnosed as obese. In addition, a quarter (25%) of adults in Arizona were diagnosed as obese.[1]

[1] Arizona Department of Health Services, Bureau of Nutrition and Physical Activity (2013). *BRFSS Weight Status Summary, 2011 Data.* Retrieved from http://www.azdhs.gov/phs/bnp/nupao/documents/BRFSS-Weight-Status-Summary-Arizona-2011.pdf

OBJECTIVE 4 Decrease the incidence of skin cancer (malignant melanoma, squamous cell carcinoma and basal cell carcinoma) by reducing UV exposure and expanding sun safety awareness and education

INDICATORS

4.a. Number of diagnosed melanoma cases in Arizona.

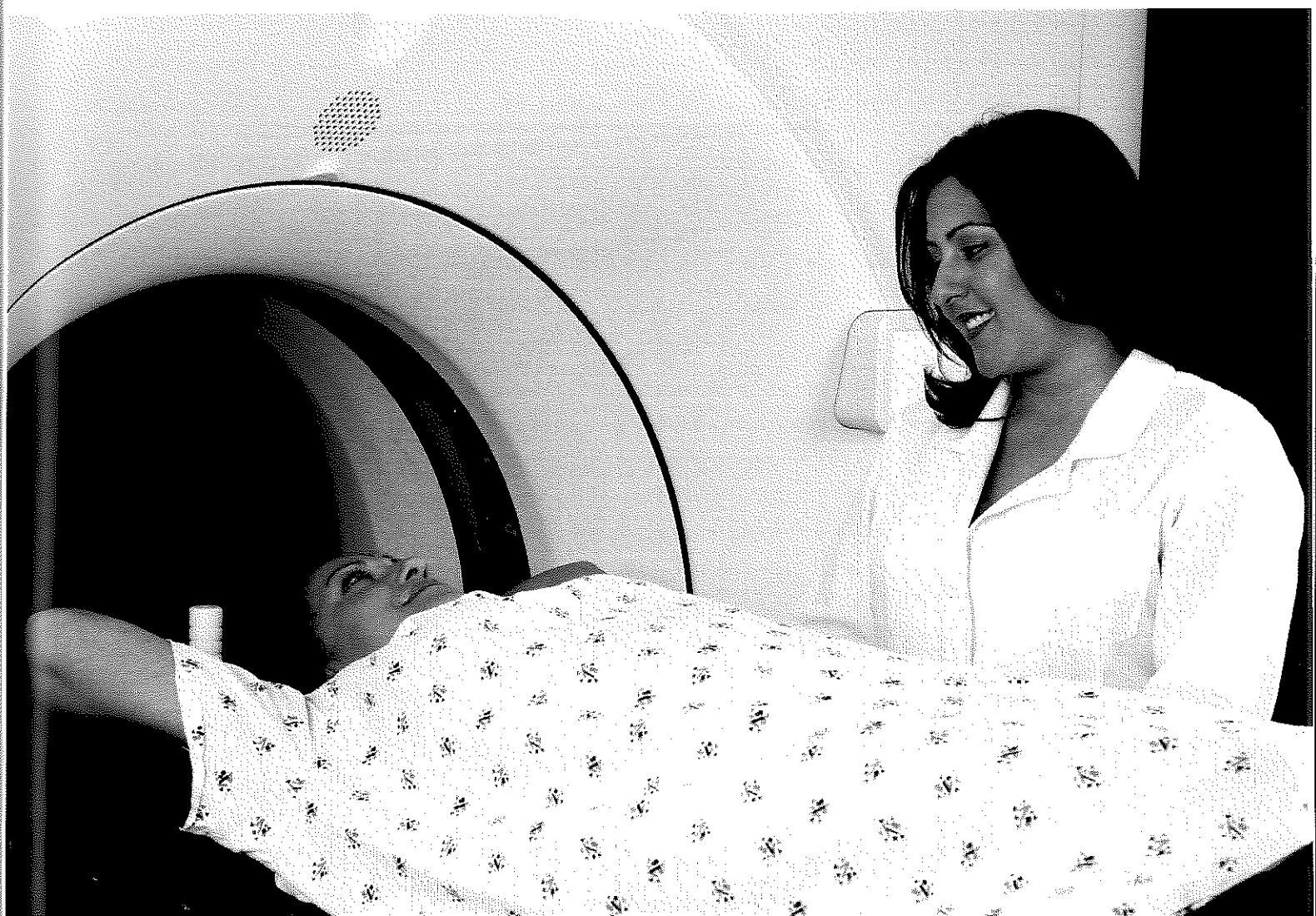


STATUS

In 2011, 1,393 invasive melanoma cases were reported to the Arizona Cancer Registry.[2]

[2] Arizona Department of Health Services. *Arizona Melanoma Reporting*, No. 2014-2. Retrieved from: http://www.azdhs.gov/phs/phstats/cancer-registry/documents/studies/az-melanoma-reporting-2014-2.pdf

Goal 3: Detect Cancer Early



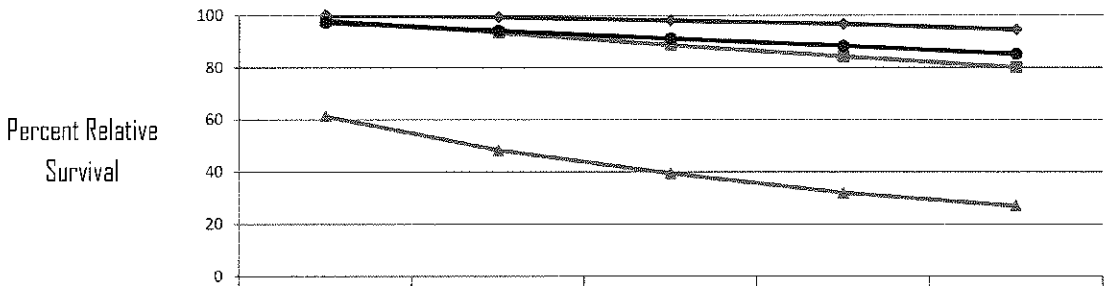
Early Detection Rationale

There are a handful of cancers considered "screenable." In other words, reliable tests exist that can be used to determine if the patient has cancer prior to presentation of any symptoms. At this time there are reliable and accepted tests for the following cancers: breast, cervical, colorectal, oral and lung. Testing for lung cancer is new and the timing of those tests is still being developed. It is based on the number of pack years of smoking and a discussion with your provider. Oral cancer screening occurs when you go to the dentist. Your dentist and/or hygienist looks for lumps and lesions in your mouth and under your tongue.

The rationale for screening for cancer is very basic and simple. If cancer is found before it spreads beyond its original site, survival rates are much higher. Regular screening supports the early discovery of cancers to insure patients live longer and enjoy a higher quality of life. And yes, there is the very common rationale of cost. It costs far less to treat an in situ (has not spread) cancer than an invasive cancer (has spread to surrounding tissues and to other parts of the body).

The chart below illustrates survival rates for breast cancer diagnosed at Local, Regional, or Distant Stage. You will see that late stage diagnosis of breast cancer leads to a different prognosis for survival. Late stage diagnosis is usually an indicator of lack of regular screening.

Five Year Relative Survival of Invasive Female Breast Cancer 1995-2008



	1 yr	2 yr	3 yr	4 yr	5 yr
Local	100	99.3	98	96.6	94.4
Regional	98.1	93.3	88.6	84.2	80
Distant	61.3	48.3	39.4	31.9	26.9
All	97.1	94.1	91.1	88.2	85.1

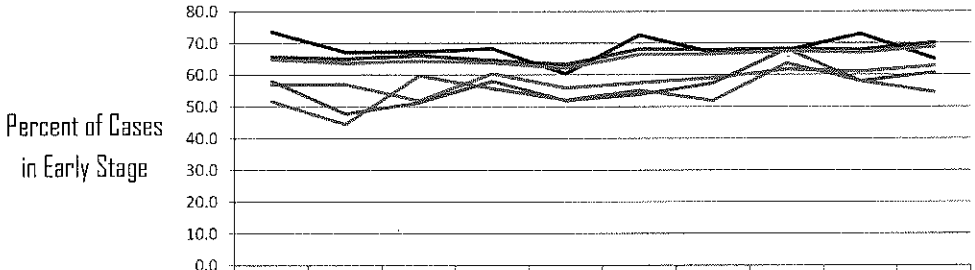
Years Survived After Year of Diagnosis

In the figure above, late (distant) stage diagnosis has a completely different prognosis for survival. Indeed, the percent of relative survival falls from 94.4% to 26.9%. This is a compelling motivator for increasing screening rates.

Historically, cancer screening rates for disparate populations have been lower and late stage diagnosis higher. Congress and the Centers for Disease Control and Prevention (CDC) created the National Breast and Cervical Cancer Early Detection Program (NBCCEDP) to focus on these rarely and never screened women. In Arizona this program is called the Well Woman HealthCheck Program or WWHP. Serving this population has changed outcomes and led to earlier stage diagnosis across all populations.

The chart below illustrates the improvement in early stage diagnosis of breast cancer across all race groups. This is a sign of success and demonstrates the importance of ongoing attention to increasing screening rates for all populations.

Percent of Early Stage Breast Cancer Cases by Race/Ethnicity for Arizona Females, 2000–2009



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
White Non-Hispanic	65.7	65.0	66.1	64.6	63.3	68.1	67.9	68.2	67.9	70.1
White Hispanic	56.9	57.0	51.9	60.4	55.9	57.5	59.0	61.7	61.0	62.8
Black	58.1	47.8	51.3	58.0	51.9	53.8	57.4	68.1	57.9	60.7
American Indian	51.7	44.4	59.7	55.7	52.1	55.1	51.9	63.6	58.0	54.5
Asian & PI	73.5	67.1	67.3	68.2	60.3	72.5	67.0	67.7	72.8	65.1
All Races	64.8	63.6	64.3	63.8	62.1	66.4	66.5	67.5	66.9	68.8

Diagnosis Year

*Early Stage = In Situ and Local Stage using SEER Summary Stage

The correlation between regular screening, early detection and enhanced survival is clear. Yet, there are many people hesitant to get screened. The reasons vary. For example, some of the reasons for women not receiving mammograms include: fear of pain or finding something abnormal, cultural issues, language barriers, lack of insurance or access to a screening facility. It is also known that some providers are not recommending screenings to their patients, nor do they have protocols in place to do so. For colorectal cancer screening the reasons differ: fear of having a colonoscopy, cultural barriers, lack of knowledge of when to begin screening, or not being aware of the different methods to be screened.

Early Detection Rationale (cont.)

Whatever the reason is, we know that in Arizona cancer screening rates are too low. The ADHS cancer screening programs have been gathering baseline screening rates for contracted and non-contracted clinics for several years. The table below compares Arizona's clinic screening rates with Healthy People 2020 Goals. It is clear there is room for improvement.

Arizona Clinic Screening Rates Compared to Healthy People 2020 Goals

Type of Cancer Screening	Clinic Rates	Healthy People 2020 Goal[1]
Breast Cancer	4-71%	81.1%
Cervical Cancer	15-72%	93.0%
Colorectal Cancer	28-44%	70.5%

The screening rates for contracted clinics listed above represent actual screening rates. There is another tool used nationally to measure these rates and that is the Behavioral Risk Factor Surveillance System, or BRFSS. BRFSS is a survey tool applied via phone calls to individual homes and cell phones. In Arizona we are using the actual clinic screening rates and BRFSS to measure changes in screening rates.

Prostate and lung cancer screening have not yet been addressed in this section. The algorithms for lung cancer screening are new and just beginning implementation. Lung cancer screening will be addressed in a future addendum to the Arizona Cancer Control Plan. At this time, there is discussion and disagreement among providers and across organizations about prostate cancer screening. If we selected a protocol for prostate cancer screening many providers would disagree. This lack of clarity does not mean these cancers won't be addressed in this document, the focus will differ. The focus will be on discussing you and your family's health history with your provider.

The Arizona Cancer Control Plan focuses on the following objectives:

- ⇒ Increase screening rates for breast, cervical and colorectal cancers
- ⇒ Increase the number of clinics able to run reports locally to determine their screening rates
- ⇒ Increase the number of health plans working with the coalition with the focus on increasing their screening rates
- ⇒ Decrease late stage diagnosis
- ⇒ Increase the proportion of women with a family history of breast and/or ovarian cancer who receive genetic testing
- ⇒ Increase the number of men, 40 and older, who have worked with their provider to create a plan for their prostate health

[1] Department of Health and Human Services (2015). *2020 Topics & Objectives: Cancer.* Retrieved from http://www.healthypeople.gov/2020/topics-objectives/topic/cancer/objectives

Goal 3: Detect Cancer Early

OBJECTIVE 1 Increase the number of Arizonans receiving breast, cervical, colorectal, and lung cancer screening

INDICATORS

1.a. Number/percentage of people screened.

STATUS

ARIZONA BRFSS DATA

59.7% of women reported having a mammogram in the past year (vs. 63.8% nationally)

80.5% of women reported having a Pap test in the past three years (vs. 85.1% nationally)

35.6% of adults reported having a Fecal Occult Blood Test ever in their lifetime: (vs. 36.2% nationally)[1]

ARIZONA FQHC DATA

The HealthCheck Programs at ADHS work to improve the use of electronic health record systems (EHRs) to collect accurate patient health data. The HealthCheck Program contracted clinics are required to report, from data collected in their clinic EHR, the rate of uninsured and insured patients who are up-to-date on their cancer screenings.

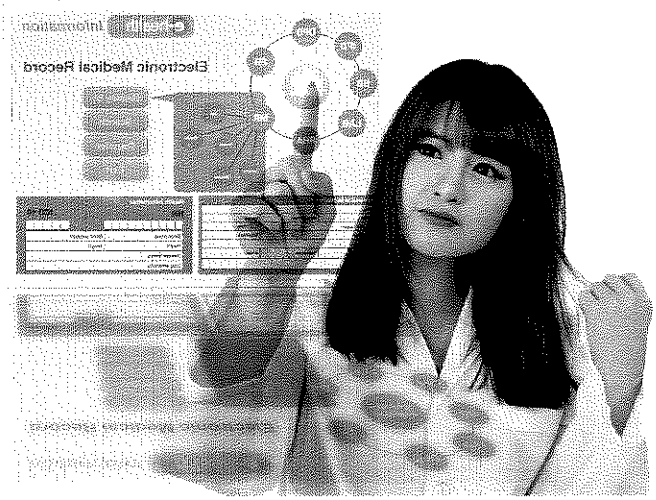
In order to obtain accurate and reliable screening data, the Early Detection Action Team continues to work on training and technical assistance within several clinics across the state. Rates captured in clinic-level EHRs are included in the Early Detection Rationale.

[1] Arizona Department of Health Services. (2012). *BRFSS 2012, Arizona Behavioral Risk Factor Surveillance System Survey.* Retrieved from http://www.azdhs.gov/phs/phstats/brfs/reports/brfss-annual-report-2012.pdf

OBJECTIVE 2 Improve the utilization of electronic health records (EHRs) and standards for meaningful use by federally qualified community health centers (FQHCs)

INDICATORS

2.a. Number of clinics able to run reports determining screening baselines for breast, cervical and colorectal cancers.



STATUS

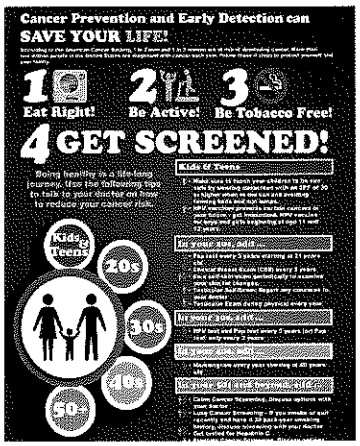
In the state of Arizona, there are currently 20 federally qualified community health centers (FQHCs) and three FQHC Look-Alikes. FQHCs are organizations receiving grants under Section 330 of the Public Health Service Act. These health centers serve an underserved population in the community and offer sliding fee scales for discounted services for low-income patients. FQHCs provide comprehensive health care services, including behavioral health services, to patients. A board of directors govern the FQHC, and an ongoing quality assurance program is in place to continually monitor and evaluate patient services and outcomes. The Arizona Alliance for Community Health Centers (AACHC) is Arizona's state Primary Care Association (PCA) that advances the expansion of FQHCs across the state and supports on going quality improvements.[3]

[3] Arizona Alliance for Community Health Centers. (2013). *Health centers.* Retrieved from http://www.aachc.org/what-is-a-healthcare-center/health-centers/

OBJECTIVE 3 Develop strategies with insurers and payers to increase screening rates

INDICATORS

3.a. Number of plans partnering with the Coalition to use evidence based strategies to increase counts/percent of covered individuals being screened.



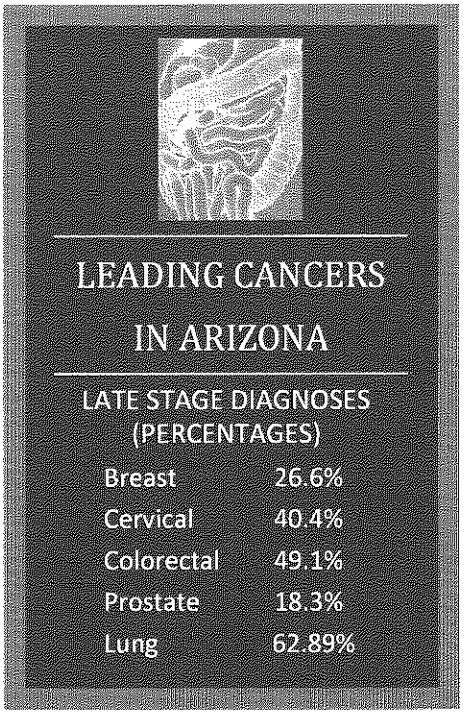
STATUS

The Early Detection Action Team is currently working with two health plans to increase their screening rates. This effort will be broadened to include additional health plans. The "Get Screened!" Infographic (*left*) has been distributed to 200,000 plan members and recently became available in Spanish. Progress is being measured.

OBJECTIVE 4 Decrease late stage diagnosis for breast, cervical, colorectal, prostate, and lung

INDICATORS

4.a. Proportion of late stage diagnosis in each cancer.



STATUS

Regular, timely cancer screening reduces late stage diagnosis. With clinics and health plans focused on increasing their screening rates, the proportion of late stage diagnosis will decrease over time. The current rates of late stage diagnosis can be seen in the table to the left.

OBJECTIVE 5

Increase the proportion of individuals with a family history of breast, ovarian, and/or colorectal cancer who receive genetic counseling and testing when appropriate.

INDICATORS

5.a. Percent of men and women completing family history and receiving genetic counseling and/or testing.

STATUS

This is a new endeavor for Arizona. In December 2013 the United States Preventive Task Force (USPSTF) released a grade B recommendation that providers screen women who have family members with breast, ovarian, tubal or peritoneal cancer.[1] The Evaluation of Genomic Applications in Practice and Prevention (EGAPP) recommends *all* individuals newly diagnosed with colorectal cancer receive genetic testing for Lynch syndrome as an effort to prevent cancer in their close relatives.[2] Healthy People 2020 has an objective to increase genetic counseling for breast and/or ovarian cancer, with a baseline measurement of 34.6 percent and a target of 38.1 percent. Healthy People 2020 is currently developing an objective and target for genetic testing for Lynch syndrome.[3]

[1] U.S. Preventive Services Task Force. (2013). *Final recommendation statement: BRCA-related cancer: Risk assessment, genetic counseling, and genetic testing.* Retrieved from http://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/brca-related-cancer-risk-assessment-genetic-counseling-and-genetic-testing

[2] Centers for Disease Control and Prevention. (2011). Genetic Testing. Lynch Syndrome EGAPP Recommendation. Retrieved November 24, 2014 from http://www.cdc.gov/genomics/gtesting/EGAPP/recommend/lynch.htm

[3] U.S. Department of Health and Human Services. (2014). Genomics. Retrieved October 23, 2014 from http://www.healthypeople.gov/2020/topics-objectives/topic/genomics/objectives

OBJECTIVE 6

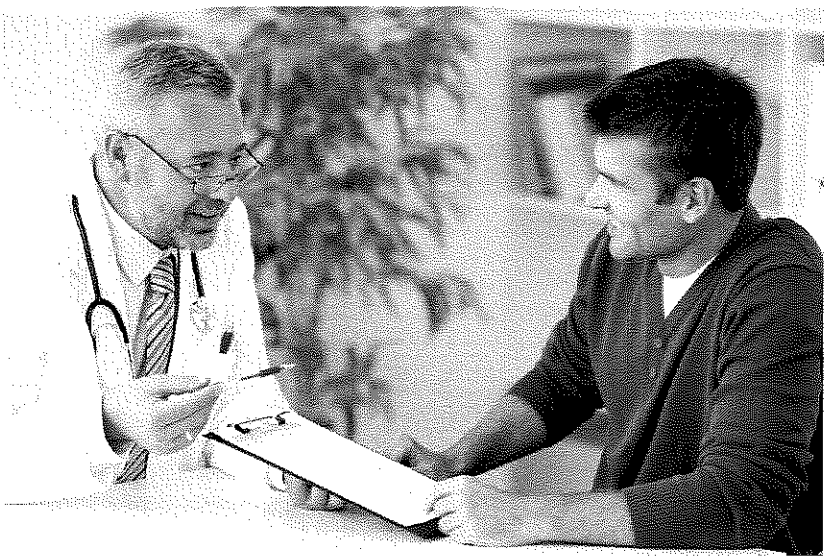
Increase the number of men 40 and older who have worked with their provider to create a plan for their prostate health.

INDICATORS

6.a. Percent of men discussing/ creating a prostate health plan with their provider.

STATUS

Under development.



Goal 4: Elevate Cancer Treatment

Treatment Rationale

In as little as two generations, there has been a revolution in cancer care. Long-term investments in cancer research, technological innovation, and advances in cancer care delivery have improved the promise of survival rates for millions of people with cancer. Patients, their families, and healthcare professionals face unique challenges in today's cancer treatment landscape:

- ⇒ Increasingly complex cancer diagnoses and treatment;
- ⇒ Rapidly growing number of patients requiring cancer care services;
- ⇒ Growth in cancer care costs; and
- ⇒ Persistent disparities in access to high quality care.[1]

Cancer survivors, their families, and the cancer care community in Arizona have indicated that access to care is their primary, overarching concern. Providers also indicate that the complex array of entry points in diagnosing cancer challenge the provider community with ensuring a high quality, rapid transition from the detection of cancer into cancer treatment.

In addition, an emerging need across Arizona is the demand for new professionals with unique skillsets to support cancer patients and their families in navigating this complex system.

Furthermore, the changing landscape of healthcare coverage will offer opportunities and challenges to our communities. The Arizona Cancer Coalition Treatment Action Team seeks to ensure a well-prepared, well-resourced cancer care community, address access to care through innovative practice models, and support the linkage to care for underinsured and uninsured patients.

[1]American Society of Clinical Oncology. (2014). The State of Cancer Care in America: 2014. Retrieved from http://www.asco.org/sites/www.asco.org/files/cancerinamerica2014-lowres_1.pdf.

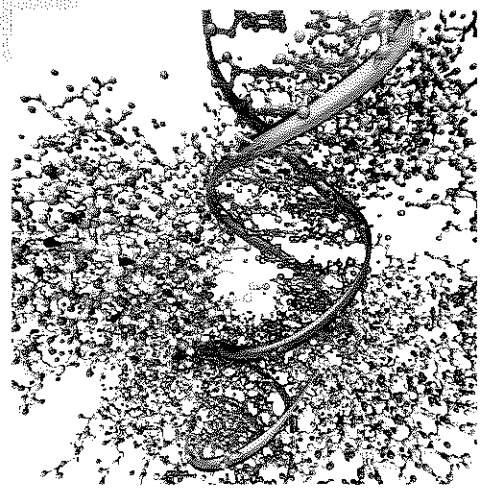
Goal 4: Elevate Cancer Treatment

OBJECTIVE 1 Decrease the time from abnormal detection to definitive diagnosis of breast, cervical, colorectal, and prostate cancers

INDICATORS

1.a. Time from abnormal detection to diagnosis.

1.b. Time from diagnosis to treatment.



STATUS

The HealthCheck Programs at the Arizona Department of Health Services (ADHS) are required to follow guidelines from the Centers for Disease Control and Prevention (CDC) for patient follow-up in order to optimize patient outcomes. All patients that enter the program must meet the requirements for timeliness into diagnostic and treatment services.

Examples of Core Program Performance Indicators for the programs are presented in the table below. To view the full performance reports for the HealthCheck Programs, please visit the programs' Data, Manuals, and Forms webpage.

ADHS HealthCheck Programs: Core Program Performance Indicators

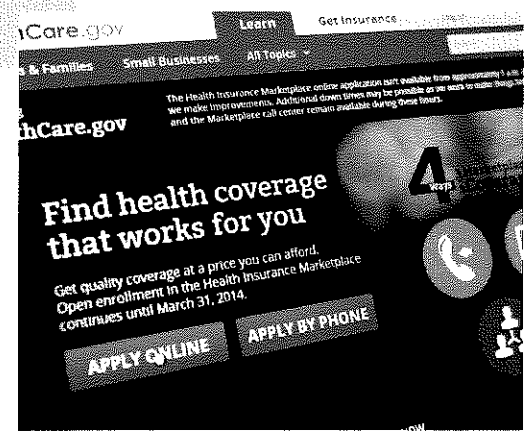
			Arizona Results	
Indicator Type	**Program Performance Indicator**	**CDC Standard**	**Percentage**	**Standard Met?**
Cervical Cancer Diagnostic Indicator	Abnormal Screening Results; Time from Screening to Diagnosis > 90 Days	≤ 25%	14.3%	YES
Breast Cancer Diagnostic Indicator	Time from Diagnosis to Treatment > 60 Days	≤ 25%	5.1%	YES
Colorectal Cancer Treatment Initiation Timeliness and Completeness	Initial Tests Requiring a Diagnostic Colonoscopy: Percentage Followed by Diagnostic Colonoscopy within 90 Days	≥ 80%	87.7%	YES

OBJECTIVE 2 Reduce the number of uninsured patients in Arizona

INDICATORS

a. Number of uninsured patients

b. Number of Marketplace Navigators and Certified Application Counselors.



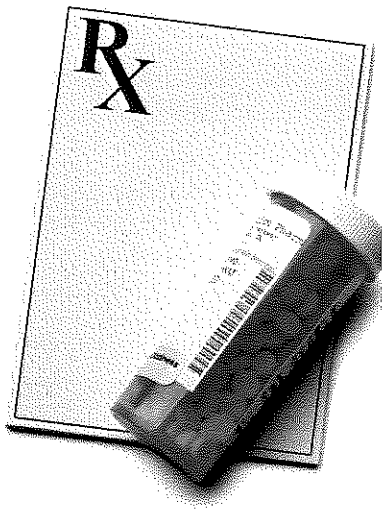
STATUS

From October 1, 2013 to April 19, 2014, 120,071 Arizonans gained health insurance coverage from the online Health Insurance Marketplace. In addition, 238,928 Arizonans gained coverage through Medicaid from October 1, 2013 to July 1, 2014. In total, 358,999 Arizonans gained health insurance coverage in 2014. This represented new coverage for 35 percent of Arizona's uninsured.

OBJECTIVE 3 Advocate for oral chemo parity

INDICATORS

3.a. Enacted legislation.



STATUS

Completed. House Bill 2078, the "Fair Access to Cancer Treatment Act", was passed on April 23, 2014. Governor Brewer signed the bill into law on April 30, 2014. This policy ensures the equal cost coverage of oral chemotherapy medications by health insurance companies, allowing patients taking oral chemo treatments to receive the same insurance coverage as other chemotherapy regimens. The law will take effect on January 1, 2016.

OBJECTIVE 4 Utilize telemedicine to increase access to state of the art diagnosis and treatment techniques

INDICATORS

4.a. Number of providers participating in telemedicine programs

STATUS

Arizona is a geographically diverse state in terms of population density and access to healthcare. The Arizona Telemedicine Program at the University of Arizona utilizes telecommunications technology to reach all patients in Arizona. In addition to providing Arizona residents with clinical specialty services in multiple rural communities across the state, telecommunication technology provides unique opportunities to ongoing clinical education for providers. The Arizona Cancer Coalition Treatment Action Team aims to promote increased participation and utilization of the Arizona Telemedicine Program.

To learn more about telemedicine in Arizona, please visit telemedicine.arizona.edu.

OBJECTIVE 5 Increase the number of reported melanoma cases

INDICATORS

5a. Proportion of melanoma cases reported as in situ compared to invasive.

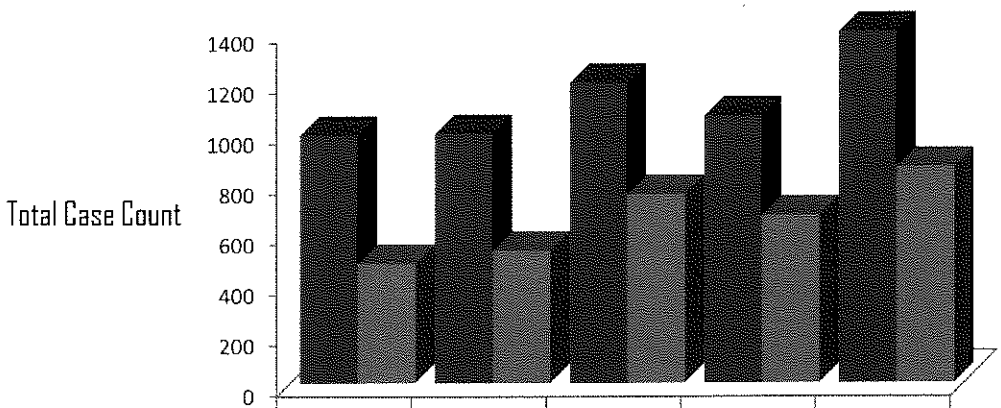
STATUS

The Melanoma Task Force determined there was substantial under-reporting of early stage melanoma cases in the state. A 2009 pilot study that reviewed 15 dermatology practices showed that 72% of the study cases were not reported to the Arizona Cancer Registry. The purpose of the task force is to identify barriers and develop strategies to improve melanoma reporting by physicians in Arizona. The task force increased efforts to report melanoma in 2011.

The Arizona Cancer Registry data for 2011 show 1,393 (62%) invasive and 857 (38%) in situ melanoma cases.

The figure below demonstrates reported melanoma cases (in situ and invasive) by year of diagnosis. **Please note**: the demonstrated increase in cases reflects an *increase in case reporting* to the Arizona Cancer Registry.

Arizona Melanoma In Situ vs. Invasive Cases Reported by Year of Diagnosis, 2007-2011



	2007	2008	2009	2010	2011
Invasive	981	988	1189	1059	1393
In Situ	473	525	748	665	857

Diagnosis Year

Goal 5: Galvanize Quality of Life (QoL)/ Survivorship Networks

Survivorship Rationale

The number of cancer survivors is on the rise. More cancer patients are beating cancer and living longer as a result of significant improvements in cancer treatment and early detection. A recent report by the American Cancer Society estimates there are almost 14.5 million Americans with a history of cancer alive in the US today, and that number is projected to grow to almost 19 million by 2024.[1] In Arizona, as of January 1, 2014, there were an estimated 348,720 cancer survivors in the state.[1] This includes only persons with a history of cancer. The number of cancer survivors is far larger utilizing the National Coalition for Cancer Survivorship expanded definition of cancer survivorship which includes family members, friends and caregivers.[2]

Cancer survivors have unique medical, psychological, and social needs. As this population grows, ensuring they have the right care and support is becoming increasingly important. Appropriate post-treatment survivorship care can increase independent living, positively affect quality of life, and ease the economic burden on the U.S .from a reduced workforce.[3] The Arizona Cancer Control Plan focuses on improving the quality of life of cancer survivors from diagnosis to end of life through the following objectives:

- ⇒ Develop and promote the utilization of common definitions
- ⇒ Raise awareness and utilization of existing survivorship resources
- ⇒ Assess and increase the use of survivorship care plans

The Arizona Cancer Coalition Survivorship Action Team is working to improve and facilitate access to resources and systems to enhance the quality of life for all cancer survivors in Arizona. Current Action Team activities include, but are not limited to: establishing and promoting consistent definitions surrounding survivorship, assessing the use of survivorship care plans and working to increase their use throughout the state, promoting existing resources and accessing gaps.

The Survivorship Action Team reviewed existing definitions for the terms *Cancer Survivor*, *Community Health Worker*, *Palliative Care*, and *Patient Navigator* and asked group members to rank the definitions in order of their preference. The definitions with the highest rankings were selected by the group and are currently being utilized and promoted by the Action Team.

The Action Team collaborated with the University of North Carolina to modify a survey on survivorship care plan utilization that they had developed and conducted on a national level. That survey was adapted by the Action Team for use in Arizona and survey results are currently being collected.

[1]Cancer Treatment and Survivorship Facts and Figures 2014-2015. American Cancer Society Web site. http://www.cancer.org/acs/groups/content/@research/documents/document/acspc-042801.pdf. Published 2014. Accessed October 1, 2014.

[2]About Us. National Coalition for Cancer Survivorship Web site. http://www.canceradvocacy.org/about-us/our-history/. Accessed October 1, 2014.

[3]Executive Summary of Cancer Survivorship: A Policy Landscape Analysis. National Cancer Survivorship Resource Center Web site. http://www.cancer.org/acs/groups/content/@editorial/documents/document/acspc-033812.pdf. Accessed October 1, 2014.

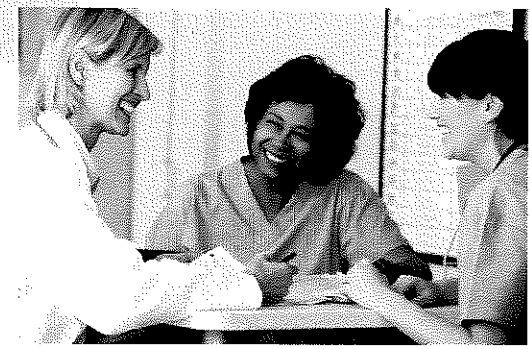
Goal 5: Galvanize Quality of Life (QoL)/Survivorship Networks

OBJECTIVE 1

Develop and promote the utilization of a common definition for cancer survivor, patient navigator, community health worker (CHW) and palliative care throughout Arizona

INDICATORS

1.a. Number of organizations that adopt the definitions.



STATUS

The Survivorship and QoL Action Team collaboratively selected and is actively promoting definitions for the following terms: Cancer Survivor, Community Health Worker, Palliative Care, and Patient Navigator. The definitions chosen by the Survivorship and QoL Action Team can be found in the Glossary at the end of this document.

OBJECTIVE 2

Raise awareness and utilization of existing survivorship resources in Arizona by developing an online user-friendly and bilingual database

INDICATORS

2.a. Online database of survivorship information and resources developed.

2.b. Number of persons utilizing the database.

STATUS

Numerous resources and tools currently exist for cancer survivors but are often underutilized due to accessibility issues or lack of awareness. The Survivorship and QoL Action Team is working with key partners to actively identify existing resources and strategize on ways to improve their accessibility and use among cancer survivors within Arizona.

OBJECTIVE 3 Assess and increase the use of survivorship care plans among health care organizations in Arizona

INDICATORS

3.a. Completed assessment of survivorship care plan use in Arizona.

3.b. Number of health care facilities in Arizona utilizing survivorship care plans.

STATUS

National Survivorship Care Plan (SCP) Survey Data:[1]

- ⇒ 56% reported SCPs were not used
- ⇒ SCP use restricted primarily to breast cancer (82%) and colorectal cancer (55%)
- ⇒ Barriers to Use:
  - * Insufficient Resources (76%)
  - * Difficulty of Use (29%)
  - * Lack of Advocacy for Use (24%)

Arizona SCP Survey:

The Survivorship and QoL Action Team , in collaboration with the University of North Carolina, adapted the national survey referenced above for use in Arizona. The Action Team has distributed the survey to key participants at cancer treatment programs throughout the state. The results will help the Action Team determine which programs are using survivorship care plans and the barriers to use.

[1]Birken S, Mayer D, Wiener B. Survivorship Care Plans Prevalence and Barriers to Use. *J Cancer Education.* 2013; 28(2): 290-296. doi: 10.1007/s13187-013-0469-x

Research Rationale

Ongoing cancer research in Arizona occurs through many organizations across the state, including the University of Arizona Cancer Center, Mayo Clinic, Banner MD Anderson Cancer Center, Scottsdale Healthcare, Translational Genomic Institute (TGen) and Arizona Oncology. Additionally, under the leadership of the Arizona Biomedical Research Commission (ABRC), Arizona has been developing an infrastructure to undertake strategic initiatives of national importance such as fostering collaboration for the acceleration of biomedical research and innovation. With these resources, Arizona has the opportunity to continue to grow as a major contributor to state, national, and global cancer research.

Currently, there are more than 400 open clinical trials in Arizona. Several barriers have been identified regarding connecting patients to opportunities in research. Primarily, it is difficult for lay members of the community to understand and access enrollment into clinical trials. Even greater challenges exist among vulnerable populations in Arizona, including those of low socioeconomic status (SES), low health literacy, and low access to healthcare.

Further, the lack of complete reporting on certain types of cancers to the Arizona Cancer Registry has resulted in a significant under reporting of the state's cancer burden.

As a result, the Arizona Cancer Control Plan works to address these obstacles through the Research Action Team within the Arizona Cancer Coalition.

Goal 6: Catalyze Research

OBJECTIVE 1 Enhance collaborations, among cancer research institutions and cancer researchers

INDICATORS

1.a. Establish a current database of cancer research institutions and cancer researchers in Arizona, and identify key contact points at each institutions for cancer research.

1.b. Complete Arizona Cancer Research Network Analysis study.

1.c. Establish the Arizona Cancer Research Collaborative.

1.d. Complete the Arizona Cancer Research Collaborative Work Plan based on the opportunities identified by the survey.

STATUS

1.a. The 2014 database of cancer research institutions and cancer researchers has been established.

1.b. The Arizona Cancer Research Network Analysis Survey instrument has been developed and will be deployed in fall 2014.

1.c. The planning for the first Arizona Cancer Research Collaborative Summit is underway. The summit will take place in winter 2015 and the Research Collaborative will be established at that time.

1.d. The Research Collaborative work plan will be completed by fall 2015.

OBJECTIVE 2

Establish better resources for Arizona cancer patients to be able to search for appropriate clinical trials for their condition/and situation

INDICATORS

2.a. Establish the baseline of numbers of patients entering cancer clinical trials in Arizona.

2.b. Increase the percentage of patients entering clinical trials by 5% a year for five years.

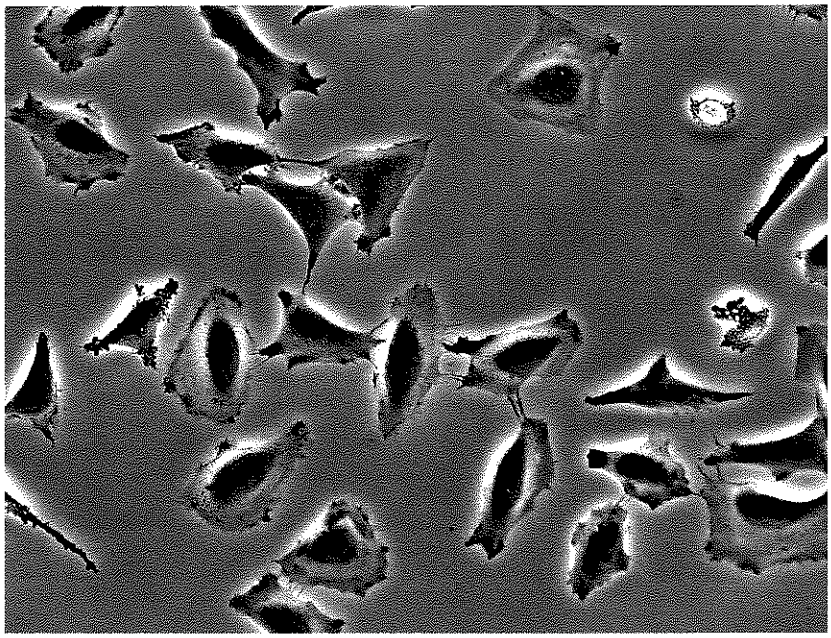
2.c. Increase the percentage of minority populations enrolled in clinical trials by 5% a year for five years.

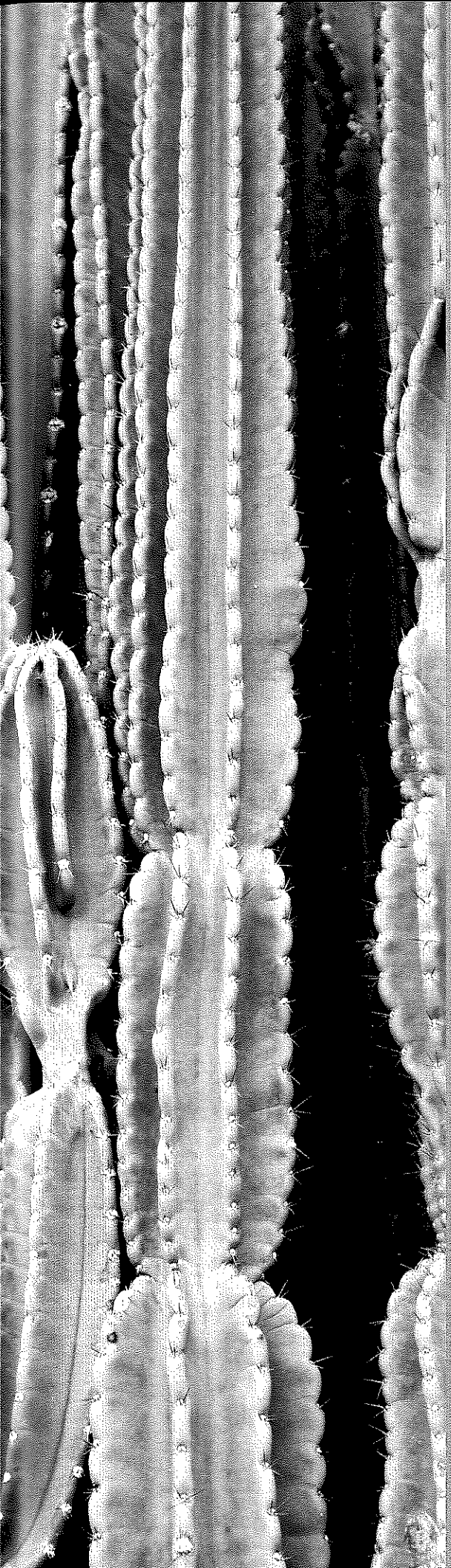
STATUS

2.a. The baseline data required for this objective has been included in the Arizona Cancer Research Network Analysis Survey instrument.

2.b. The question of increasing patient access and entry to clinical trials will be included in the 2015 Arizona Cancer Research Collaborative Summit.

2.c. The 2015 work plan established by the Arizona Research Collaborative will include an action plan to increase patient access and entry to clinical trials.





Arizona Department of Health Services

Resources

Arizona's State Health Improvement Plan and the Arizona Cancer Control Plan – How Do They Align?

Arizona Department of Health Services (ADHS) began their accreditation work with the creation of a State Health Assessment. The assessment provided a snapshot of Arizona's health status, issues, and concerns. The county health departments conducted their own county health assessments (CHAs) and this information was integrated into the state's health assessment. The continuation of this process is the creation of health improvement plans at the state and county level. At the state level, the health improvement plan is referred to as the Arizona State Health Improvement Plan (AzHIP); at the county level, the County Health Improvement Plan, or CHIP.

Creation of the AzHIP is led by a steering committee. To view the webinar regarding the AzHIP creation process, please visit the Managing for Excellence Program online. The steering committee designed tools for gathering and consolidating information from throughout ADHS. Each area of ADHS was asked to address specific topics and summarize an area of focus. To view the summary provided to the steering committee regarding Arizona and cancer, visit the Cancer Health Issue Brief. The next step is the creation of a Cancer Work Group, supporting the AzHIP, that will review available data and select priorities to address cancer in Arizona.

As ADHS and the counties were creating their health assessments, the Arizona Cancer Coalition and the ADHS Cancer Prevention and Control Programs were creating the Arizona Cancer Control Plan. The Arizona Cancer Control Plan contains objectives to be achieved by the Arizona Cancer Coalition Action Teams and partners over the next five years. The objectives were determined by each of the Action Teams: Policy, Prevention, Early Detection, Treatment, Survivorship, and Research. As evidenced by the objective statuses provided in this report, work has already begun and continues to move forward.

The Cancer Work Group for the AzHIP will benefit greatly from work done by the Cancer Coalition. They will have concise and descriptive data, objectives with measures and baselines, and currently active work groups poised and ready to support achievement of the AzHIP's goals. This timely alignment of stakeholders around cancer is promising. This alignment will support:

- ⇒ Data-based decision making;
- ⇒ Prioritized efforts, based upon data, to be the focal point of many;
- ⇒ Broadened input on priorities from many stakeholders;
- ⇒ An infrastructure, the work groups, already taking action geared toward reducing the burden of cancer in Arizona; and
- ⇒ Stakeholders from across the state willing to support the actions via time talent and treasure.

Cancer is the leading cause of death in Arizona. We lose 209 Arizonans each week to cancer. The alignment of the AzHIP with the Arizona Cancer Control Plan has the potential, through collective impact, to reduce that number.

Cancer Programs and Resources at the Arizona Department of Health Services

The Arizona Department of Health Services (ADHS) possesses several programs working collaboratively to address the burden of cancer in Arizona. The Bureau of Public Health Statistics, Office of Health Registries, houses the Arizona Cancer Registry at the Arizona Department of Health Services. The Office of Cancer Prevention and Control resides in the Division of Public Health Services, Bureau of Health Systems Development, at ADHS. Together, these programs make up the Arizona Cancer Prevention and Control Team.

Arizona Cancer Registry

The Arizona Cancer Registry (ACR) supports the collecting of cancer cases (incidence) and deaths (mortality) from cancer across the state of Arizona. Cancer reporting became mandatory on January 1, 1992. All cancer cases are reported to the ACR by providers, hospitals, pathology laboratories, and clinics across the state. The ACR reviews data accuracy, provides statistical support, responds to data requests, and monitors data trends.

The ACR also engages in special projects to improve its reporting levels, as evidenced by the Melanoma Task Force, which witnessed questionably low rates of melanoma in Arizona. The Melanoma Task Force found that melanoma cases are currently under-reported by providers, and now actively works with dermatologists to improve their reporting practices to the ACR. Without this data, the true impact of melanoma in Arizona remains under-estimated.

To view a complete report on the status of cancer in Arizona, along with the level of late stage diagnoses by cancer type, please view the Arizona Cancer Report.

In conjunction with the Office of Cancer Prevention and Control, the ACR produces several factsheets, reports, and other data documents on the state of cancer in Arizona. The ACR reviews for data accuracy, provides statistical support, responds to data requests and monitors data trends.

Office of Cancer Prevention and Control (CPC)

The Office of CPC contains three CDC-funded programs: the Comprehensive Cancer Control Program, the Breast and Cervical Cancer Early Detection Program, and the Colorectal Cancer Control Program. Locally, the Comprehensive Cancer Control Program facilitated the reformation of the Arizona Cancer Coalition and Action Teams across the state.

The Breast and Cervical Cancer Early Detection Program, known locally as the Well Woman HealthCheck Program (WWHP), and the Colorectal Cancer Control Program, also known locally as the FIT at Fifty HealthCheck Program (FFHP), provide cancer screening and diagnostic services and linkage to treatment to uninsured Arizonans. In addition, the Office of CPC seeks to educate providers and the community about the importance of timeliness of services and appropriate patient follow up, systems change approaches, and effective electronic health record (EHR) system utilization within federally qualified health centers (FQHCs).

Comprehensive Cancer Control Program (CCC)

ARIZONA CANCER COALITION

The Arizona Comprehensive Cancer Control Program enabled the development of the Arizona Cancer Coalition (ACC), a statewide group of public health professionals, providers, medical directors, survivors, and patients, who aim to reduce the incidence and mortality of cancer in Arizona. The ACC is composed of six "Action Teams" having specific cancer-related goals: Policy, Prevention, Early Detection, Treatment, Survivorship, and Research. The objectives and goals of these Action Teams are the core informants of this Cancer Control Plan, which are referenced and outlined in detail within this report. To find out more about the Arizona Cancer Coalition, visit azcancercoalition.org

HealthCheck Programs

The HealthCheck Programs at ADHS encompass two programs serving Arizona residents directly: the Well Woman HealthCheck Program (WWHP) and the FIT at Fifty HealthCheck Program (FFHP).

Well Woman HealthCheck Program (WWHP)

The WWHP provides breast and cervical cancer screening, including clinical breast exams, mammograms, Pap tests, HPV tests, and diagnostic services to uninsured and underinsured women aged 21 – 65 years old in Arizona. The WWHP has been offered in Arizona since 1993 and screens 10,000 women each year across the state and is the local implementation of the National Breast and Cervical Early Detection Program (NBCCEDP). The WWHP is offered in all fifteen counties of Arizona through contracted providers belonging to federally qualified health centers (FQHCs) or county health departments. To view a listing of contracted providers and to learn more about the program, visit wellwomanhealthcheck.org.

If cancer is found, Arizona offers the Breast and Cervical Cancer Treatment Program (BCCTP), and patients are enrolled in an AHCCCS-health plan at no cost to them. The patient's cancer treatment is completely covered. To learn more about the BCCTP, please visit the BCCTP Eligibility webpages.

FIT at Fifty HealthCheck Program (FFHP)

The FFHP offers colorectal cancer screening, including the Fecal Immunochemical Test (FIT) and colonoscopy, to uninsured men and women in Arizona who are 50 years of age and older. The FFHP is a five-year old program and screens 1,500 men and women every year; it is the local implementation of the Colorectal Cancer Control Program. The FFHP services are provided through contracted providers located at federally qualified health centers (FQHCs) in regions across Arizona. To find a contracted provider and to learn more about the program, visit fitatfiftyhealthcheck.org. If colorectal cancer is found, patients may be eligible to receive support through a partnership with the local chapter of the Colon Cancer Alliance.

Arizona Biomedical Research Commission

For more than 30 years, the Arizona Biomedical Research Commission (ABRC) has been partnering with Arizona's researchers, universities, and nonprofit organizations to conduct research on diseases, find cures, establish best practices and acceptable treatment methods, and seek out new drug discoveries. One of ABRC's priority areas for research funding has been cancer. As a result, new insights on cancer fighting drugs such as halistatins has been introduced while the progress continues on fighting cancer at a molecular and cellular level.

Although ABRC may be more widely recognized for its role in providing competitively awarded funding to Arizona Researchers through the Research Grants Program, we also fund the Arizona Biospecimen Locator, Research Education, and the Arizona Public Cord Blood Program.

Arizona Biospecimen Locator. Acquiring quality biospecimens is one of the largest obstacles researchers face as they strive to advance medical science and improve patient care. ABRC facilitated the creation of the Arizona Biospecimen Consortium and Locator to provide researchers with specimens needed to advance their research studies. The Locator is a web-based biospecimen database of both diseased and normal solid tissues, cells, fluids and molecular samples stored at participating Arizona hospitals and tissue banks. Using the Locator encourages research collaboration that may lead to more effective treatments and potential cures.

Research Education. In working with Arizona researchers, ABRC identified a need to aid in policy development and make high quality educational resources available. The ABRC Educational Initiative sought to create a shared sense of community by bringing national and local experts together to engage Arizona researchers and clinical professionals in emerging topics. ABRC also offers on-line access at no cost to a comprehensive suite of courses for those engaged in performing and overseeing human subject clinical research and remains committed in providing affordable in-person workshops throughout the year.

Arizona Public Cord Blood Program. Currently, seven out of ten patients that have genetic or life-threating diseases such as leukemia or lymphoma will depend on a public registry (such as the National Marrow Donor Program) to find a bone marrow transplant match. The Arizona Public Cord Blood Program was created to advance the collection of umbilical cord blood. Umbilical cord blood is blood that remains in the blood vessels of the placenta and the umbilical cord after the baby is born and the cord has been clamped and cut. Umbilical cord blood contains hematopoietic stem cells or blood-forming cells (cells that can form other blood cells). These blood-forming cells are also found in bone marrow.

In the past, the placenta and umbilical cord were thrown away. Today, the blood can be collected, stored, and made available for transplant. Through this program, ABRC works with Arizona hospitals to collect, store, and add diverse cord blood units to the National Marrow Donor Program registry – increasing the likelihood that all patients will find a match.

ABRC also supports the Arizona Alzheimer's Consortium and the Translational Genomics Research Institute. To view all projects supported by ABRC, please view the ABRC Annual Reports.

Arizona Department of Health Services

Arizona Biomedical Research Commission

Grants · Biospecimen Locator · Education · Public Cord Blood

The Core Team

The Core Team for the Arizona Cancer Prevention and Control Programs was developed in 2012 to improve program outcomes by enhancing collaboration and streamlining efforts among cancer and chronic disease programs within the Arizona Department of Health Services. The team is comprised of leaders from key programs within the Arizona Department of Health Services, including: Bureau of Tobacco and Chronic Disease, Sun Wise Skin Cancer Prevention Program, Arizona Cancer Registry, Arizona Health Disparities Center and Arizona Cancer Prevention and Control Programs which includes Comprehensive Cancer Control and the Well Woman and FIT at Fifty HealthCheck Programs. The Core Team meets on a monthly basis to share program updates, strategize on ways to facilitate collaboration, and reduce duplication of efforts in order to increase the impact of programs. Including key partners such as Arizona Alliance for Community Health Centers and Health Services Advisory Group has expanded the scope of project work achieved by the team.

Evaluation

An evaluation team from LeCroy & Milligan Associates, Inc. was engaged to monitor process and outcome evaluation measures for the activities within the Arizona Cancer Coalition (ACC). A comprehensive evaluation plan was developed to measure the 25 objectives determined by the ACC Action Teams. Continuous evaluation of the work and process within the Action Teams, Steering Committee, Core Team and the ACC as a whole guides the coordination of work being conducted throughout Arizona and ensures activities are focused, effective, and aligned with statewide objectives.

The evaluation team provides support to the Steering Committee and Action Teams by assisting with planning and facilitation of Action Team meetings, identifying the activities of the work groups that align with their work groups' objectives and goals, providing ad-hoc professional development and data analysis technical assistance for work groups' activities and reporting on quarterly progress within work groups' Action Plans. In addition, the evaluation team provides expertise and coordination among collaboration opportunities between the Core Team and all components of the Arizona Cancer Prevention and Control Programs. Meetings are assessed based upon their level of effectiveness, collaboration, and quality of leadership.

Glossary of Terms

Age-Adjusted Incidence and Mortality Rates

Age adjustment is a process used to compare incidence and mortality rates over time or among geographic areas or population that have different age distributions. Because most disease rates increase with age, age-adjustment eliminates the confounding effect of age when comparing rates. Cancer incidence and mortality is usually expressed in the number of new cases or deaths per 100,000 persons in a population.

Age-Specific Rates

The rate of incidence or mortality of a specific age group, calculated per 100,000 people.

Best Practices

A practice supported by a rigorous process of peer review and evaluation indicating effectiveness in improving health outcomes, generally demonstrated through systematic reviews.

Built Environment

The built environment is defined as the human-made features of our communities. The way we design and build our communities can affect our physical and mental health; in turn designing and building healthy communities can improve the quality of life for all people.

Cancer Burden

An estimate of the financial, emotional, or social impact that cancer creates within the population. Different racial, ethnic, geographic, and age groups in the United States do not share the burden of disease equally.

Cancer Survivor

An individual is considered a cancer survivor from the time of diagnosis, through the balance of his or her life. Family members, friends, and caregivers are also impacted by the survivorship experience and are therefore included in this definition.

Community Health Worker

A Community Health Worker (CHW) is a frontline public health worker who is a trusted member of and/or has an unusually close understanding of the community served. This trusting relationship enables the CHW to serve as a liaison/link/intermediary between health/social services and the community to facilitate access to services and improve the quality and cultural competence of service delivery.

Continuum of Care

In medicine, describes the delivery of health care over a period of time. In patients with a disease, this covers all phases of illness from diagnosis to the end of life.

Disparities (Health)

Healthcare disparities refer to differences in access to or availability of facilities and services. Health status disparities refer to the variation in rates of disease occurrence and disabilities between socioeconomic and/or geographically defined population groups.

Distant Stage

Cancer that has spread from the primary site to distant organs or distant lymph nodes.

Early Stage

Early stage combines in situ and local stage using the SEER Summary Stage guidelines.

Evidence Based Strategies (Practices)

Evidence-based practices are approaches to prevention or treatment that are validated by some form of documented scientific evidence. This includes findings established through controlled clinical studies, but other methods of establishing evidence are valid as well.

Federally Qualified Health Center (FQHC)

Federally qualified health centers (FQHCs) include all organizations receiving grants under Section 330 of the Public Health Service Act (PHS). FQHCs qualify for enhanced reimbursement from Medicare and Medicaid, as well as other benefits. FQHCs must serve an underserved area or population, offer a sliding fee scale, provide comprehensive services, have an ongoing quality assurance program, and have a governing board of directors.

Health Equity

Health equity is achieved when every person has the opportunity to "attain his or her full health potential" and no one is "disadvantaged from achieving this potential because of social position or other socially determined circumstances.

Health Promotion

Health promotion is the process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behavior towards a wide range of social and environmental interventions.

Health Risk Factors

A risk factor is any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury.

Glossary of Terms (cont.)

In situ cancer

Early cancer that is present only in the layer of cells in which it began. There is no penetration of the basement membrane of the tissue.

Incidence

The number of newly diagnosed cases of cancer during a specific time period.

Invasive Cancer

Cancer that has spread beyond the layer of tissue in which it developed and is growing into surrounding, healthy tissues -- generally, the stage is either "localized," "regional," or "distant."

Late Stage

A term used to describe cancer that is far along in its growth, and has spread to the lymph nodes or other places in the body. Late stage combines regional and distant stage using the SEER Summary Stage guidelines.

Local Stage

Cancer that is limited to the organ in which it began, without evidence of spread.

Meaningful Use

Meaningful use is using certified electronic health record (EHR) technology to:

- Improve quality, safety, efficiency, and reduce health disparities
- Engage patients and family
- Improve care coordination, and population and public health
- Maintain privacy and security of patient health information

Mortality

The number of deaths from cancer during a specific time period.

Palliative Care

Palliative care is specialized medical care for people with serious illnesses. It is focused on providing patients with relief from the symptoms, pain, and stress of a serious illness—whatever the diagnosis. The goal is to improve quality of life for both the patient and the family.

Patient Navigator

Patient navigators—a diverse group of lay people and health care professionals who assist patients at all stages of cancer care, from screening and diagnosis to treatment and survivorship.

Prevalence

The number of people alive on a certain date who have been diagnosed with cancer at any time in their lives. This is different from incidence in that it considers both newly diagnosed and previously diagnosed people.

Prognosis

The likely outcome or course of a disease; the chance of recovery or recurrence.

Quality of Life

The overall enjoyment of life. Many clinical trials assess the effects of cancer and its treatment on the quality of life. These studies measure aspects of an individual's sense of well-being and ability to carry out various activities.

Regional Stage

Cancer that has spread beyond the original (primary) site to nearby lymph nodes or organs and tissues.

Relative Survival

The National Cancer Institute defines relative survival as a net survival measure representing cancer survival in the absence of other causes of death. Relative survival is defined as the ratio of the proportion of observed survivors in a cohort of cancer patients to the proportion of expected survivors in a comparable set of cancer free individuals. Relative survival in this cancer plan adjusts for age and sex.

Screening (Cancer)

Cancer screening is looking for cancer before a person has any symptoms. Screening tests can help find cancer at an early stage, before symptoms appear. When abnormal tissue or cancer is found early, it may be easier to treat or cure. By the time symptoms appear, the cancer may have grown and spread. This can make the cancer harder to treat or cure.

Sliding-Fee-Scale

Sliding-scale-fees are variable costs for products, services, or taxes based on one's ability to pay. Such fees are thereby reduced for those who have lower incomes or less money to spare after their personal expenses, regardless of income.

Social Determinants of Health

The social determinants of health are the conditions in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels.

Stage

Stage provides a measure of disease progression, detailing the degree to which the cancer has advanced.

Glossary of Terms (cont.)

Survival

Survival examines how long after diagnosis people live. Cancer survival is measured in a number of different ways depending on the intended purpose.

Telemedicine

Telemedicine is the use of medical information exchanged from one site to another via electronic communications to improve a patient's clinical health status. Telemedicine includes a growing variety of applications and services using two-way video, email, smart phones, wireless tools and other forms of telecommunications technology.

Underinsured

Having some insurance coverage but not enough, or when one is insured yet unable to afford the out -of-pocket responsibilities not covered by his or her insurer.

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Arizona State University
ASU College of Nursing & Health Innovation
Employers Health Alliance of Arizona
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Cancer Centers of Northern Arizona Healthcare
Care 1st Health Plan Arizona
CDC - Phoenix Indian Medical Center
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Colon Cancer Alliance
Department of Health and Human Services
Flinn Foundation
Health e-Connections
Health Net of Arizona, Inc.
Health Net, Inc.
Health Services Advisory Group Arizona
Inter Tribal Council of Arizona
John C. Lincoln Health Network
Leukemia and Lymphoma Society
Maricopa Integrated Health System
Mayo Clinic
Mayo Clinic Cancer Center
McMullen Consulting, LLC
Mercy Healthcare Group
Mountain Park Health Center
National Ovarian Cancer Coalition
Navajo Breast & Cervical Cancer Prevention Program
Navajo Nation
North Country HealthCare
Novartis Pharmaceuticals Corporation
Pima County Health Department
St. Joseph's Hospital & Medical Center
St. Luke's Health Initiative
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Susan G. Komen Southern Arizona
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United Healthcare
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University of Arizona Cancer Center at St. Joseph's

Dangers of Indoor Tanning: Talking Points

- 3.6 million skin cancers in the United States Annually
- **420,000 skin cancers and 6,200 melanomas annually are attributed to tanning beds**
- **More individuals develop skin cancer because of tanning than develop lung cancer because of smoking**
- Annual cost of skin cancer is the United States is 8,100,000,000 dollars
- **Approximately 1,000,000,000 dollars in cost of skin cancer can be attributed to indoor tanning**
- Melanoma is the most common form of cancer for young adults
- Leading cause of cancer death of women 25-29, most common form of cancer of young adults and the second most common for adolescents
- **97% of all patients with a melanoma diagnosis before the age of 30 have a history of sun tanning and all had tanned before 25**
- 20% of adolescents have a history of tanning
- The number of adolescents tanning is increasing
- 40% of individuals who tan meet the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) criteria for being "addicted"
- Ultraviolet light has definitively shown to cause skin cancer, including melanoma
- Early exposure and high intensity ultraviolet light increases the preventable risk beyond chronic low level exposure
- Melanoma and skin cancers are unique in that the early damage to melanoma causing cells do not manifest until years to decades after exposure
- World Health Organization classified Tanning beds as carcinogenic in 2009
- Melanoma is unique in that the early damage to melanoma causing cells do not manifest until years to decades after exposure
- **Indoor tanning is a skin cancer risk for individuals of any age; but, highest amongst young individuals**
- Meta-analysis found that 20% of adolescents have a history of tanning
- The number of adolescents tanning is increasing
- **Tanning beds do not comply with regulations and one study found that only 43% of tanning beds complied with parental consent**
- 2010 Federal Trade Commission (FTC) charged the Indoor Tanning Association with making "false claims" about the safety
- 2012 United States Energy and Commerce Committee Investigation found that 90% of tanning salons denied the known risks of indoor tanning, 80% claimed false health benefits, they failed to follow the US Food and Drug Administrations recommendations on tanning, and they targeted teenage women

Arizona's Athletic Trainers (ATs)

- ATs provide service to over **100,000 Arizonans**, most of whom are children and adolescents, through:
  - **Prevention, diagnoses, treatment, and rehabilitation** of injuries; and
  - **Prevention, evaluation, immediate care**, and **monitoring** of illnesses; and
  - **Coordination of care** with physicians and other allied health professionals.
- We're NOT "trainers" - We're ***Athletic Trainers*** (ATs)
- ATs are regulated by the Arizona Board of Athletic Training (AzBAT) under the provisions of Title 32, Article 41, ARS
- ATs work under the **direction** of a physician.
- The AzATA speaks for more than **600 Athletic Trainers** working in Arizona in the following settings:
  - High Schools
  - Colleges & Universities
  - Professional Sports
  - Outpatient Orthopaedic & Sports Medicine Clinics

Questions?

Email us!

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Or Find Us on the Web At:

http://azata.net

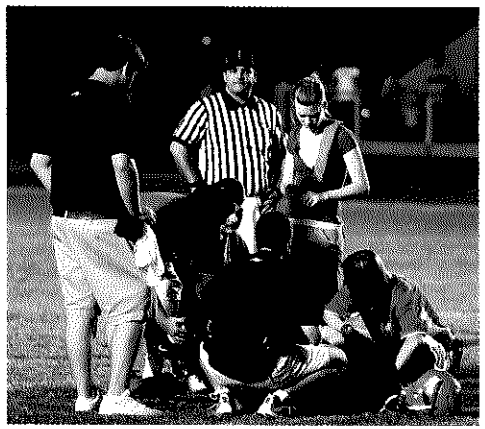
ARIZONA ATHLETIC TRAINERS' ASSOCIATION

Arizona Athletic Trainers' Association

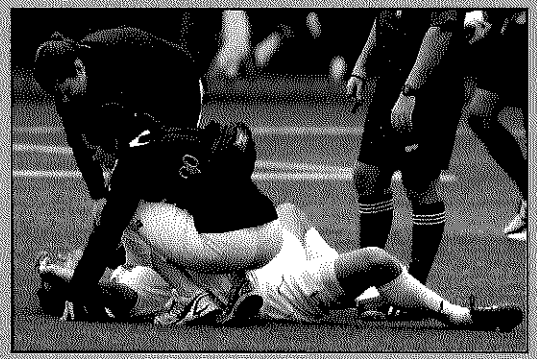
Taking Care of Arizonans In Sport & Physical Activity

AzATA Mission

- To promote and enhance athletic training, as an allied health profession;
- To serve the overall health care needs of the athletic population;
- To work in cooperation with other organizations and health care professions.



Facts About Athletic Training (AT)



- ATs are licensed or otherwise regulated in 49 states and D.C.
- ATs are trained to treat, prevent, and address key issues such as brain and neck injuries, heat illnesses and cardiac events, as well as routine injuries and illnesses
- Over 50% of ATs work outside of school athletic settings
- The national independent **Board of Certification (BOC)** certifies, but does not regulate, athletic trainers
- 70% of ATs have a **master's or doctorate degree**
- **50 hours of continuing education must regularly** be attained by an athletic trainer to retain certification every 2 years

National Athletic Trainers' Association

- Founded in 1950, the NATA has more than 46,000 members.
- The mission is to enhance the quality of health care provided by certified athletic trainers and to advance the athletic training profession.

For more information visit

http://www.nata.org

NATA

NATIONAL ATHLETIC TRAINERS' ASSOCIATION

HEALTH CARE FOR LIFE & SPORT

WHY IS AN AUTOMATED EXTERNAL DEFIBRILLATOR IMPORTANT?

In the US alone, approximately 350,000 people of all ages experience out-of-hospital Sudden Cardiac Arrest (SCA) each year. One of the most effective ways of treating cardiac arrest is using an electronic defibrillation typically in less than 8 seconds and followed by a CPR pause, resulting in a successful return to normal heart rhythm and saving more lives.

An Automated External Defibrillator (AED) can be used by healthcare professionals, emergency responders, and laypersons. AED's are small, lightweight, compact, and portable user-friendly electronic devices that automatically diagnose potential life-threatening heart rhythms. The AED will provide simple audio and possibly visual instructions (depending on the device), and advise if an electronic shock is necessary through the administration of the two adhesive electrode pads.

Timing is crucial as survival rate decreases 7-10% for every minute without immediate defibrillation, in conjunction with CPR. The longer the heart has been in Ventricular Fibrillation (VF), the harder it is to restart. This is the reason why it is extremely important to have an effective AED program in place.

The American Foundation for Cardiomyopathy recommends Philips Automated External Defibrillators, namely the Phillips HeartStart Onsite, the Phillips Heart Start FRX, and the Phillips Heart Start FR3.

***For every five AED's sold, we are able to donate one AED to youth athletic teams, schools, community centers and places of worship.*

Anthony Miller, founder and president of a 501(c)3 non-profit organization, American Foundation for Cardiomyopathy, is a Hypertrophic Cardiomyopathy (HCM) carrier, a complex cardiac disease that causes a thickening of the heart muscle. He has made it his personal mission to build heart safe communities by providing preventative youth heart screenings and CPR certification courses, including raise money for life-saving automatic external defibrillators (AEDs) for places with a huge presence of children such as youth athletic teams, schools, community centers, and places of worship.

The foundation operates with the mission to create awareness about cardiomyopathy and support those already affected by the heart disease. We are dedicated to providing families with heart screenings, resources, training opportunities, and other support. For more information about the foundation and youth heart screenings, please visit **www.AmericanFFC.org**.

"I have made it my personal mission to ensure every household and business are trained in CPR and educated about the importance of having and providing accessibility to an AED for life-saving emergencies. As a parent, carrier of cardiomyopathy and survivor of sudden cardiac arrest, I also believe in the natural order of life, our children should not precede us. Therefore, I feel we should do everything possible to build heart safe communities."

ANTHONY MILLER
FOUNDER, AMERICAN FOUNDATION FOR CARDIOMYOPATHY

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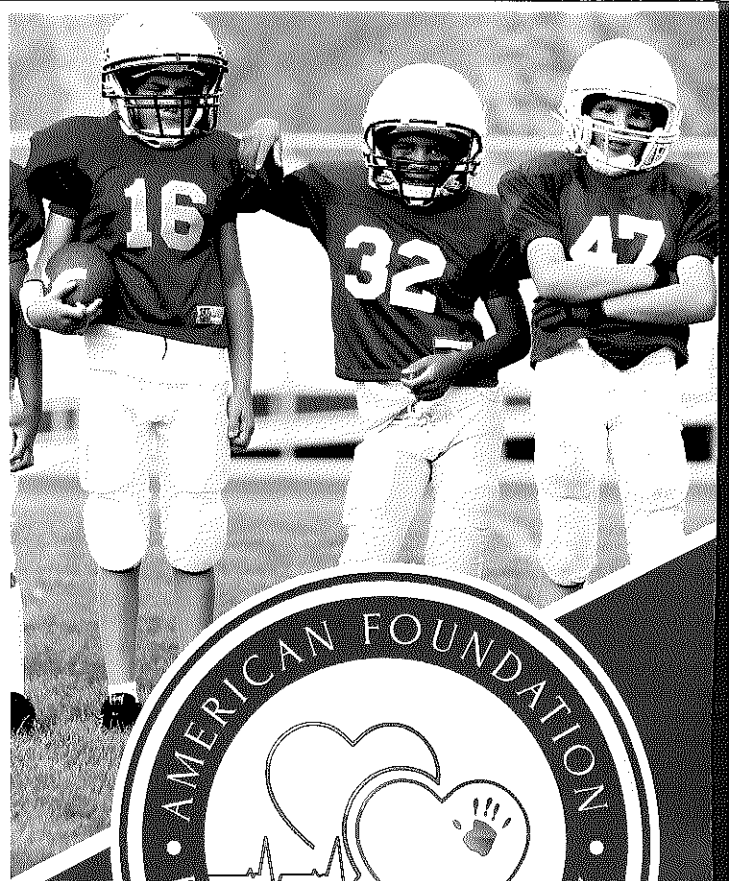
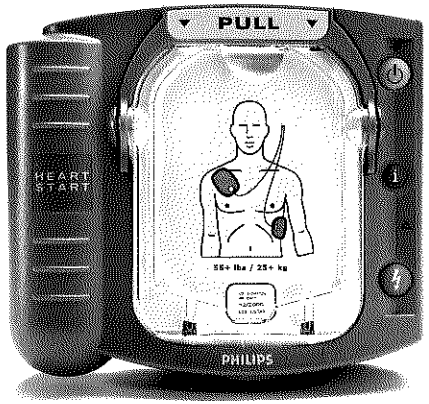


AMERICAN FOUNDATION FOR CARDIOMYOPATHY

BUILDING HEART SAFE COMMUNITIES



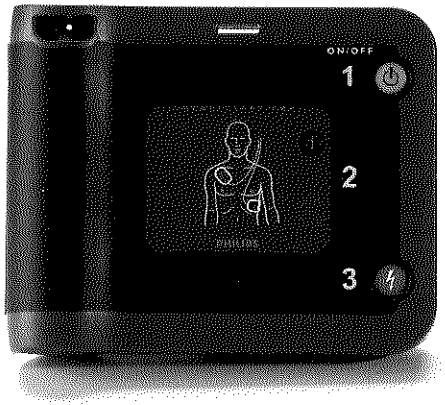
PHILIPS HEARTSTART ONSITE AED

IDEAL FOR PERSONAL USE

- OFFICE
- HOME
- CHURCH
- SCHOOLS

- Ready-to-rescue AED device
- Turns on with easy-to-use pull handle
- Personalized coaching to guide you quickly through an emergency
- Safely delivers maximum shock strength
- Built-in daily, weekly & monthly self checks
- QuickShock technology minimizes chest compression interruptions
- Integrated SMART pads that sense application to patient skin
- Clear, intuitive visual queues
- Effective therapy with SMART Biphasic technology
- Provides low-energy/high-current therapy
- Technology to measure Chest/Muscle Impedance

2.4 LBS WITH BATTERY AND PADS
NO PRESCRIPTION REQUIRED
WITHSTANDS 1 METER DROP TO EDGE
200 SHOCKS OR 4 HOURS OPERATING TIME
DATA STORED FOR FIRST 15 MINUTES
WARRANTY: AED 8 YEARS, BATTERY 4 YEARS AND PADS 2 YEARS



PHILIPS HEARTSTART FRX AED

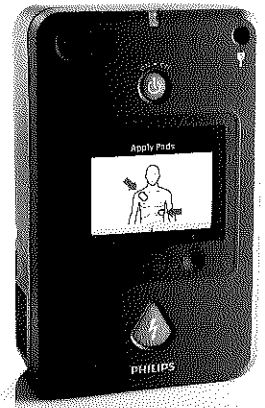
IDEAL FOR EMERGENCY RESPONDER USE

- RV/MOTORHOME
- BOATS
- COMMUNITY & YOUTH SPORTS
- POLICE DEPT
- FIRE DEPT
- FIRST RESPONDERS

- Designed to be easy to set up and use
- Infant/child key allows rescuer to use adult pads on patients under 55 lbs or 8 years old
- Designed for the toughest conditions: jetting water, crushing loads up to 500 pounds and a one-meter drop onto concrete
- Effective therapy with SMART Biphasic technology
- Built-in daily, weekly & monthly self checks
- Provides low-energy/high-current therapy
- Technology to measure Chest/Muscle Impedance
- Lifetime tracking and notification technology

3.5 LBS WITH BATTERY AND PADS
AVIATION BATTERY FAA COMPLIANT (OPTIONAL)
200 SHOCKS OR 4 HOURS OF OPERATING TIME
IP RATING 55 (DUST AND WATERPROOF)
DATA STORED FOR FIRST 15 MINUTES
WARRANTY: AED 8 YEARS, BATTERY 4 YEARS AND PADS 2 YEARS

ALL UNITS SHOWN INCLUDES AN AED CARRYING CASE, ONE SET OF SMART PADS, A LITHIUM BATTERY AND A HEART SMART CPR/AED RESCUE KIT



PHILIPS HEARTSTART FR3 AED

IDEAL FOR HEALTHCARE PROFESSIONALS USE

- CLINICS
- EMS
- FIRE DEPT

- Automatically powers on when carrying case is opened
- Smallest and lightest professional-grade AED among leading manufacturers
- ECG display with high-resolution color LCD for noisy environments
- Pre-connected peel and place pads to reduce deployment time
- Infant/child key allows rescuer to use adult pads on patients under 55 lbs or 8 years old
- QuickShock technology minimizes chest compression interruptions
- Built-in daily, weekly & monthly self checks
- Quick shock allows a shock to be administered faster
- Bilingual configuration optional
- Provides continuous support in improving review, annotations, printouts, and storing of all AED events to help your team learn from each incident

3.8 LBS WITH BATTERY AND PADS
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- Exertional Heat Illnesses (2015)
- Management of Sport Concussion (2014)
- Preparticipation Physical Examinations and Disqualifying Conditions (2014)
- National Athletic Trainers' Association Position Statement: Preventing Sudden Death in Sports (2012)
- National Athletic Trainers' Association Position Statement: Safe Weight Loss and Maintenance Practices in Sport and Exercise (2011)
- Acute Management of the Cervical Spine-Injured Athlete (2009)

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Attachment 5

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position statement

National Athletic Trainers' Association Position Statement: Exertional Heat Illnesses

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Objective: To present best-practice recommendations for the prevention, recognition, and treatment of exertional heat illnesses (EHIs) and to describe the relevant physiology of thermoregulation.

Background: Certified athletic trainers recognize and treat athletes with EHIs, often in high-risk environments. Although the proper recognition and successful treatment strategies are well documented, EHIs continue to plague athletes, and exertional heat stroke remains one of the leading causes of sudden death during sport. The recommendations presented in this document provide athletic trainers and allied health providers with an integrated scientific and clinically applicable approach to the prevention, recognition, treatment of, and return-to-activity guidelines for EHIs. These recommendations are given so that proper recognition and treatment can be accomplished in order to maximize the safety and performance of athletes.

Recommendations: Athletic trainers and other allied health care professionals should use these recommendations to establish onsite emergency action plans for their venues and athletes. The primary goal of athlete safety is addressed through the appropriate prevention strategies, proper recognition tactics, and effective treatment plans for EHIs. Athletic trainers and other allied health care professionals must be properly educated and prepared to respond in an expedient manner to alleviate symptoms and minimize the morbidity and mortality associated with these illnesses.

Key Words: heat cramps, heat syncope, heat exhaustion, heat injury, heat stroke, dehydration

The prevention, recognition, and treatment of exertional heat illnesses (EHIs) are core components of sports medicine services at all levels of sport. The risk of EHI is ever present during exercise in the heat but can also occur in "normal" environmental conditions. Our current knowledge base has allowed us to greatly enhance the level of care that can be provided for athletes with these medical conditions. This document serves as the current position statement for the National Athletic Trainers' Association (NATA) and replaces the document that was published in 2002.[1]

The care of exertional heat-stroke (EHS) patients has come a long way in the past millennia. We now possess the knowledge to nearly assure survival from this potentially fatal injury if EHS is quickly and appropriately recognized and treated at the time of collapse.[2,3] Additionally, our knowledge base and proven management protocols allow us to establish effective prevention and management strategies to minimize the risk of and improve the outcome

from EHS, thereby affecting public health via policy creation and modification.

DEFINITIONS OF EHIs

Exercise-Associated Muscle Cramps

Exercise-associated muscle cramps (EAMCs) are sudden or sometimes progressively and noticeably evolving, involuntary, painful contractions of skeletal muscle during or after exercise.[4,5] *Heat cramps* is a popular but technically inappropriate term for a certain category of EAMCs because they are not directly related to an elevated body temperature,[5,6] do not readily occur after passive heating at rest, and can present during exercise in warm or even cool[6–8] and temperature-controlled conditions,[9] although extensive sweating is typical. The signs and symptoms of incipient EAMCs can be described as *tics*, *twinges*, *stiffness*, *tremors*, or *contractures*, but these terms refer to conditions that are typically painless and do not demonstrate muscle activity on electromyography, unlike full-blown EAMCs.[10] The cause of EAMCs is not fully confirmed; proposed contributing factors and conditions include dehydration,[5] electrolyte imbalances,[5,11] altered neuromuscular control,[4] fatigue, or any combination of these factors.[5–10]

Heat Syncope

Heat syncope, or orthostatic dizziness, often occurs in unfit or heat-unacclimatized persons who stand for a long period of time in the heat or during sudden changes in posture in the heat, especially when wearing a uniform or insulated clothing that encourages and eventually leads to maximal skin vasodilation. This condition is often attributed to dehydration, venous pooling of blood, reduced cardiac filling, or low blood pressure with resultant cerebral ischemia.[12] Heat syncope usually occurs during the first 5 days of unaccustomed heat exposure (eg, during the preseason), before the blood volume expands and cardiovascular adaptations are complete, and in those with heart disease or taking diuretics.[13]

Heat Exhaustion

Heat exhaustion is the inability to effectively exercise in the heat, secondary to a combination of factors, including cardiovascular insufficiency, hypotension, energy depletion, and central fatigue.[14] This condition is manifested by an elevated core body temperature (usually <40.5°C) and is often associated with a high rate or volume of skin blood flow, heavy sweating, and dehydration.[15] It occurs most frequently in hot or humid (or both) conditions, but it can also occur in normal environmental conditions with intense physical activity. Heat exhaustion most often affects heat-unacclimatized or dehydrated individuals with a body mass index >27 kg/m.[16] By definition, absent from heat exhaustion are end-organ damage, which would indicate heat injury (eg, renal insufficiency, rhabdomyolysis, or liver injury), and significant central nervous system (CNS) dysfunction with marked temperature elevation (>40.5°C [105°F]), which would indicate the possibility of EHS.

Exertional Heat Injury

Heat injury is a moderate to severe heat illness characterized by organ (eg, liver, renal) and tissue (eg, gut, muscle) injury associated with sustained high body temperature resulting from strenuous exercise and environmental heat exposure. Body temperature is usually but not always greater than 40.5°C (105°F).[17,18]

Exertional Heat Stroke

Exertional heat stroke is the most severe heat illness. It is characterized by neuropsychiatric impairment and a high core body temperature, typically >40.5°C (105°F).[16,19] This condition is a product of both metabolic heat production and environmental heat load and occurs when the thermoregulatory system becomes overwhelmed due to excessive heat production (ie, metabolic heat production from the working muscles) or inhibited heat loss (ie, decreased sweating response, decreased ability to evaporate sweat) or both. Although this illness is most likely to occur in hot and humid weather, it can manifest with intense physical activity in the absence of extreme environmental conditions. The first sign of EHS is often CNS dysfunction (eg, collapse, aggressiveness, irritability, confusion, seizures, altered consciousness).[19] A medical emergency, EHS can progress to a systemic inflammatory response and multi-organ system failure unless promptly and correctly recognized and treated. The risks of morbidity and mortality increase the longer an individual's body temperature remains elevated above the critical threshold (>40.5°C [105°F]) and are significantly reduced if body temperature is lowered promptly.[20]

RECOMMENDATIONS

The NATA advocates the following prevention, recognition, and treatment strategies for EHIs. These recommendations are presented to help certified athletic trainers and other health care providers maximize health, safety, and sport performance. However, individual responses to physiologic stimuli and environmental conditions vary widely. Therefore, these recommendations do not guarantee full protection from exertional heat-related illnesses but could mitigate the risks associated with athletic participation and physical activity. These recommendations and prevention strategies should be carefully considered and implemented by certified athletic trainers and the health care team as part of an overall strategy for the prevention and treatment of EHIs. The strength of each recommendation follows the Strength of Recommendation taxonomy (SORT; Table 1).[21]

Prevention

1. Conduct a thorough, physician-supervised preparticipation medical screening before the start of the season to identify athletes with risk factors for heat illness or a history of heat illness (Table 2).[22,23] *Strength of recommendation: C*
2. Individuals should be acclimatized to the heat gradually over 7 to 14 days.[22–26] Heat acclimatization involves progressively increasing the intensity and duration of physical activity and phasing in protective equipment (if

Table 1. Strength of Recommendation Taxonomy (SORT)[a]

Strength of Recommendation	Definition
A	Recommendation based on consistent and good quality experimental evidence (morbidity, mortality, exercise and cognitive performance, physiologic responses).
B	Recommendation based on inconsistent or limited quality experimental evidence.
C	Recommendation based on consensus; usual practice; opinion; disease-oriented evidence[b]; case series or studies of diagnosis, treatment, prevention, or screening; or extrapolations from quasi-experimental research.

[a] Reprinted with permission from Ebell MH, Siwek J, Weiss BD, et al, Strength of recommendation taxonomy (SORT): a patient-centered approach to grading evidence in the medical literature, 2004;69(3):548–556, *Am Fam Physician*. Copyright 2004 American Academy of Family Physicians. All Rights Reserved.[14]

[b] Patient-oriented evidence measures outcomes that matter to patients: morbidity, mortality, symptoms improvement, cost reduction, and quality of life. Disease-oriented evidence measures intermediate, physiologic, or surrogate end points that may or may not reflect improvements in patient outcomes (eg, blood pressure, blood chemistry, physiologic function, pathologic finding).

applicable). If heat acclimatization is not maintained, the physiologic benefits provided by this process will decay within 3 weeks.[24–26] The first 2–3 weeks of preseason practice typically present the greatest risk of EHI, particularly in equipment-intensive sports.[26,27–29] All possible preventive measures should be used during this time to address this high-risk period (Figure 1). *Strength of recommendation: B*

3. Athletes who are currently sick with a viral infection (eg, upper respiratory tract infection or gastroenteritis) or other illness or have a fever or serious skin rash should not participate until the condition is resolved.[16,27,30] Even after symptoms resolve, the athlete may still be susceptible to heat illness and should be observed carefully upon return to exercising in the heat. *Strength of recommendation: B*
4. Individuals should maintain euhydration and appropriately replace fluids lost through sweat during and after games and practices (see the NATA position statement on fluid replacement in athletes[31]). Players should have free access to readily available fluids at all times, not just during designated breaks. Instruct them to eat or drink appropriate sodium-containing fluids and foods to help replace sodium losses in sweat and urine and to enhance hydration (ie, water retention and distribution). The aims of fluid consumption or replacement are to prevent a body mass loss of more than 2% (as measured before and after the practice or game) and to keep morning urine light in color.[31,32] These strategies may reduce the risk of acute and chronic significant dehydration and decrease the risk of EHI.[27,31–34] *Strength of recommendation: B*
5. The sports medicine staff must educate relevant personnel (ie, coaches, administrators, security guards, emergency medical services [EMS] staff, athletes) on preventing and recognizing EHI and, in particular, EHS.[35,36] Signs and symptoms of a medical emergency should be reviewed, and every institution should have and personnel should practice an emergency action plan specific to each practice and game site. Review and rehearsal of the emergency action plan should include all relevant members of the sports medicine team (ie, coaches, athletic trainers, EMS). *Strength of recommendation: C*
6. Appropriate medical care must be available, and all personnel must be familiar with EHI prevention, recognition, and treatment.[35–37] Certified athletic trainers and other health care providers covering practices or events are the primary providers of medical care for athletes who display signs or symptoms of EHI and have the authority to restrict an athlete from participating if EHI is suspected or to refer the athlete for a significant EHI condition. *Strength of recommendation: C*
7. When environmental conditions warrant, a cold-water or ice tub and ice towels should be available to immerse or soak a patient with a suspected heat illness.[33,37] Immediate whole-body cooling is essential for treating EHI and EHS in particular. Onsite facilities are needed for immediate treatment. *Strength of recommendation: B*
8. The assessment of rectal temperature is the clinical gold standard for obtaining core body temperature of patients with EHS[38] and the medical standard of practice and accepted protocol. No other field-expedient methods of obtaining core body temperature (eg, oral, axillary, tympanic, forehead sticker, temporal) are valid or reliable after intense exercise in the heat, and they may lead to inadequate or inappropriate treatment, thereby endangering a patient's health.[38–41] Parents, administrators, coaches, and student-athletes should be educated ahead of time that this procedure will be used for heat-illness emergencies, especially in patients suspected of having heat exhaustion or EHS. Esophageal and gastrointestinal

Table 2. Sample Preparticipation Physical Examination Questions Related to Exertional Heat Stroke[69]

1. Have you ever previously been diagnosed with exertional heat stroke? If yes
   a. How long ago?
   b. Have you had any complications since then?
   c. How long did it take you to return to full participation?
   d. Did you have any complications upon your return to play?
   e. Was an exercise heat tolerance test conducted to assess your thermoregulatory capacity?
2. Have you ever been diagnosed with heat exhaustion? If yes
   a. When?
   b. How many times?
3. Have you ever had trouble or complications from exercising in the heat (eg, feeling sick, throwing up, dizzy, lack of energy, decreased performance, muscle cramps)?
4. How much training have you been doing recently (in the past 2 weeks)? Has this been performed in warm or humid weather?
5. Have you been training during the last 2 months? Would you say you are in poor, good, or excellent condition?
6. Describe your drinking habits. (Are you conscious of how much you consume? Is your urine consistently dark?)
7. Would you consider yourself a heavy or a salty sweater?
8. How many hours of sleep do you get per night? Do you sleep in an air-conditioned room?
9. Do you take any supplements or ergogenic aids?

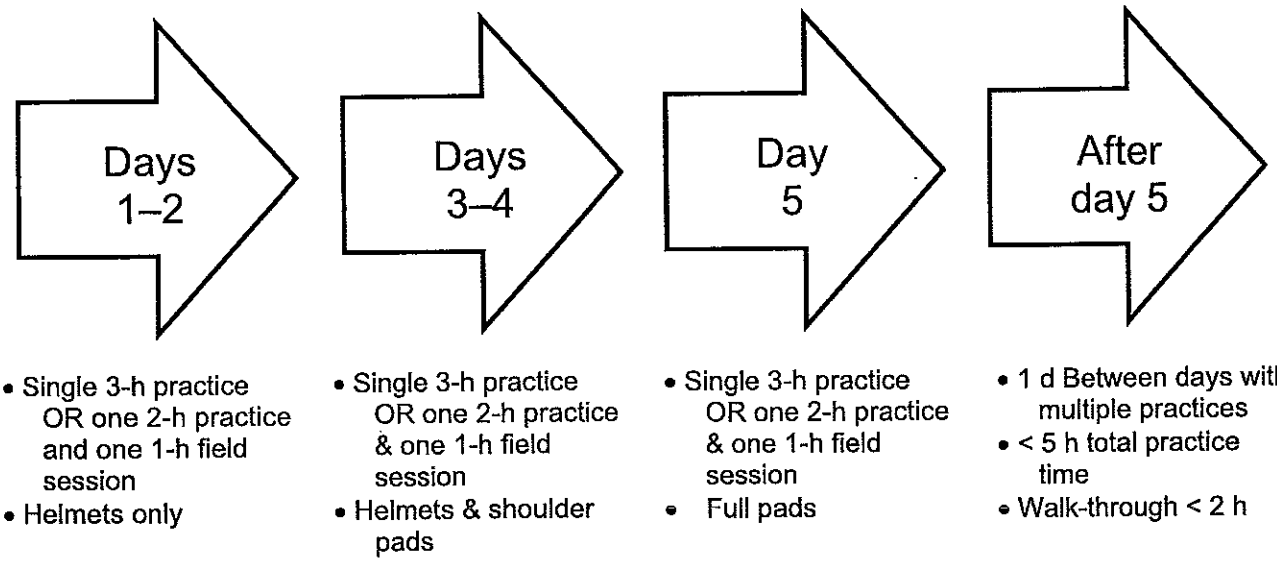

Figure 1. National Collegiate Athletic Association heat-acclimatization guidelines.

(via ingestible thermistor) measurements may be appropriate alternatives for temperature assessment but require advanced training for the former and careful planning for the latter. Under all circumstances in which EHS is possible, a rectal temperature assessment should be able to be obtained. *Strength of recommendation: A*

9. Because the effects of heat are cumulative, athletes should be encouraged to sleep at least 7 hours per night in a cool environment; eat a balanced diet; and properly hydrate before, during, and after exercise.[16] Individuals should also be advised to rest in a cool environment during periods of inactivity (eg, off days, between sessions on double-practice days) to maximize recovery. Rest periods should incorporate meal times and allow 2 to 3 hours for food, fluids, electrolytes (primarily sodium and chloride), and other nutrients to be digested and absorbed before the next practice or competition. *Strength of recommendation: C*
10. To anticipate potential problems, a preseason heat-acclimatization policy should be developed for organized sports and event guidelines formulated for hot, humid weather conditions based on the type of activity and wet-bulb globe temperature (WBGT).[23,26] In stressful environmental conditions, particularly during the first 2–3 weeks of preseason practice, activity should be delayed or rescheduled or the practice session shortened to reduce the risk to participants. Special attention should be given to practice drills that involve high-intensity activity and full protective equipment worn by players, as these factors may exacerbate the amount of heat stress on the body. *Strength of recommendation: B*
11. Individuals who may be particularly susceptible to EHI must be identified.[42–45] They should be closely monitored during stressful environmental conditions, and preventive steps should be taken.[45,46] In addition, emergency supplies and equipment (eg, tubs for cold-water immersion [CWI], rectal thermometer) should be onsite, easily accessible, and in good working order to allow for immediate intervention and treatment if needed. *Strength of recommendation: B*
12. Rest breaks should be planned and the work-to-rest ratio modified to match the environmental conditions and the intensity of the activity.[45–47] Breaks should be in the shade or in a predetermined cooling zone and should allow enough time for all athletes to consume fluids. Additionally, players should be permitted to remove equipment (eg, helmets) during rest periods. *Strength of recommendation: B*
13. The use of dietary supplements and other substances that have a dehydrating effect, increase metabolism, or affect body temperature and thermoregulation is discouraged.[48] Because supplements may increase the risk of EHI, their use should be carefully monitored. *Strength of recommendation: C*
14. Minimal experimental evidence exists regarding the most effective method of preventing EAMCs due to the variety of causes. Supplemental sodium ingestion and fluid monitoring[9] or neuromuscular reeducation[49] may help to prevent EAMC recurrences. Clinicians should identify the patient's unique intrinsic (eg, hydration, acclimatization, biomechanics, training status) and extrinsic (eg, climate conditions, exercise intensity) risk factors that preceded EAMCs before implementing a prevention strategy. *Strength of recommendation: C*

Recognition

Exercise-Associated Muscle Cramps.

15. A patient experiencing EAMCs will likely show 1 or more of the following signs and symptoms: visible cramping in part or all of the muscle or muscle groups, localized pain, dehydration, thirst, sweating, or fatigue.[4,5,50] *Strength of recommendation: C*
16. A thorough medical history should be obtained to distinguish muscle cramping as a result of an underlying clinical condition (eg, sickle cell trait) from EAMCs.[50] The latter is often preceded by subtle muscle twitching,[4] whereas the former is not. *Strength of recommendation: C*
17. Most EAMCs related to overload or fatigue tend to be short in duration (less than 5 minutes) and mild in

severity.[7,51] However, some EAMCs severely affect athletic performance and as a result, prohibit further exercise; require further medical attention to resolve; or elicit soreness for several days.[7,49–51] *Strength of recommendation: B*

Heat Syncope.

18. A patient who experiences a brief episode of fainting associated with dizziness, tunnel vision, pale or sweaty skin, and a decreased pulse rate while standing in the heat or after vigorous exercise (with a relatively low rectal temperature [<39°C]) is likely experiencing heat syncope.[12] However, responsiveness, breathing, and pulse must be assessed to rule out a cardiac event, which can present with similar signs and symptoms but is a more serious condition. *Strength of recommendation: B*
19. A thorough medical history and physical examination should be performed to eliminate any other medical conditions that could cause syncope. *Strength of recommendation: C*

Exertional Heat Exhaustion.

20. Heat exhaustion may be present if the patient demonstrates excessive fatigue, faints, or collapses with minor cognitive changes (eg, headache, dizziness, confusion) while performing physical activity,[15] yet the athletic trainer should assess the patient's CNS function by noting any bizarre behavior, hallucinations, altered mental status, confusion, disorientation, or coma that may indicate a more serious condition such as EHS. Other signs and symptoms of exertional heat exhaustion may include fatigue, weakness, dizziness, headache, vomiting, nausea, lightheadedness, low blood pressure, and impaired muscle coordination. *Strength of recommendation: B*
21. It is strongly recommended that a rectal temperature be obtained to differentiate exertional heat exhaustion from the more serious EHS. With heat exhaustion, core body temperature (measured rectally) is usually less than 40.5°C (105°F), a key characteristic that differentiates it from EHS. *Strength of recommendation: A*

Exertional Heat Stroke.

22. The 2 main diagnostic criteria for EHS are CNS dysfunction and a core body temperature greater than 40.5°C (105°F).[16,19,52] However, if a suspected EHS victim exhibits CNS dysfunction even though the rectal temperature is slightly lower (ie, 40°C [104°F]), it is prudent to assume the patient is suffering from EHS and begin the appropriate treatment. After initial collapse, recognition is often delayed, and the patient may begin to cool passively, dropping below the 40.5°C (105°F) threshold. Rectal temperature thermometry is the only method of obtaining an immediate and accurate measurement of core body temperature. Other devices, such as oral, axillary, aural canal, tympanic, forehead sticker, and temporal artery thermometers, inaccurately assess the body temperature of an exercising person.[38–41] A delay in accurately assessing temperature during diagnosis may also explain a body temperature that is lower than expected. *Strength of recommendation: A*
23. Because immediate treatment is vital in EHS, it is important to not waste time by substituting an invalid method of temperature assessment if rectal thermometry is not available. Instead, the practitioner should rely on other key diagnostic indicators (ie, CNS dysfunction, circumstances of the collapse). If EHS is suspected, CWI (or another rapid cooling mechanism if CWI is not available) should be initiated immediately. *Strength of recommendation: C*
24. In a patient suspected of having EHS, CNS function should be assessed. Signs and symptoms can include disorientation, confusion, dizziness, loss of balance, staggering, irritability, irrational or unusual behavior, apathy, aggressiveness, hysteria, delirium, collapse, loss of consciousness, and coma. In some cases, a lucid interval may be present; however, if EHS is present, the patient will likely deteriorate quickly. *Strength of recommendation: B*
25. Other signs and symptoms of EHS that may be present include dehydration, hot and wet skin, hypotension, and hyperventilation. Most patients with EHS have hot, sweaty skin as opposed to those with the classical type of heat stroke (the passive condition that typically affects children and the elderly), who present with dry skin. (Table 3). *Strength of recommendation: B*

Heat Injury.

26. Heat injury is a moderate to severe heat illness characterized by end-organ damage but the absence of the profound CNS dysfunction often found with EHS.[17,18] Evaluation usually reveals very dark (cola-colored) urine, severe muscle pain, and abnormal blood chemistry levels. *Strength of recommendation: B*

Treatment

Exercise-Associated Muscle Cramps.

27. The immediate treatment for acute EAMCs related to muscle overload or fatigue is rest and passive static stretching of the affected muscle until cramps abate.[7,51,53] Icing, massage, or both may also help relieve some of the discomfort after EAMCs.[5] For EAMCs related to excessive sweating and a suspected whole-body sodium deficit, the patient must ingest sodium-containing fluids (preferably) or foods (or both) to help return the body to normal fluid, electrolyte, and energy distribution. *Strength of recommendation: B*
28. Fluid absorption, retention, and distribution are enhanced by beverages that contain sodium and carbohydrates. A high-sodium product (eg, salt packet) may be added to a beverage to help offset sodium lost via exercise-induced sweating. Similarly, small volumes (eg, 1 mL per 1 kg body weight) of a salty solution such as pickle juice may be consumed, if tolerated, without negatively affecting ad libitum water ingestion,[54] plasma electrolyte concentrations,[55] or thirst or causing nausea or stomach fullness.[54] *Strength of recommendation: B*
29. Patients with EAMCs are normally conscious and responsive and have normal vital signs.[50] Thus, clinicians can provide fluids orally to a patient suffering from EAMCs who is compliant and tolerating fluid intake. The use of intravenous fluids should be considered if the patient is noncompliant or unable to tolerate fluids.[5] *Strength of recommendation: A*
30. Patients with recurring EAMCs should undergo a thorough medical screening to rule out more serious

Table 3. Clinical Distinctions of Exertional Heat Illnesses

Characteristic	Heat Illness			
	Exercise-Associated Muscle (Heat) Cramps	Heat Syncope	Heat Exhaustion	Exertional Heat Stroke
Description	Acute, painful, involuntary muscle contractions presenting during or after exercise	Collapsing in the heat, resulting in loss of consciousness	Inability to continue exercise due to cardiovascular insufficiency	Severe hyperthermia leading to overwhelming of the thermoregulatory system
Physiologic cause	Dehydration, electrolyte imbalances, and/or neuromuscular fatigue	Standing erect in a hot environment, causing postural pooling of blood in the legs	High skin blood flow, heavy sweating, and/or dehydration, causing reduced venous return	High metabolic heat production and/or reduced heat dissipation
Primary treatment factors	Stop exercising, provide sodium-containing beverages	Lay patient supine and elevate legs to restore central blood volume	Cease exercise, remove from hot environment, elevate legs, provide fluids	Immediate whole-body cold-water immersion to quickly reduce core body temperature
Recovery	Often occurs within minutes to hours	Often occurs within hours	Often occurs within 24 h; same-day return to play not advised	Highly dependent on initial care and treatment; further medical testing and physician clearance required before return to activity

neuromuscular conditions (eg, fatigue, hydration level, improper nutrition).[50] *Strength of recommendation: C*

Heat Syncope.

31. The clinician should move the patient to a shaded area, monitor vital signs, elevate the legs above the level of the heart, cool the skin, and rehydrate.[12] *Strength of recommendation: C*

Exertional Heat Exhaustion.

32. Removing any excess clothing and equipment increases the evaporative surface of the skin and facilitates cooling. *Strength of recommendation: C*
33. The patient should be moved to a cool or shaded area. Further body cooling should be accomplished via fans or ice towels if necessary. *Strength of recommendation: C*
34. While monitoring vital signs, the clinician should place the patient in the supine position with legs elevated above the level of the heart to promote venous return.[15,16,56] *Strength of recommendation: C*
35. If intravenous fluids are needed or if recovery is not rapid (within 30 minutes of initiation of treatment) and uneventful, fluid replacement should begin and the patient's care transferred to a physician. If the condition worsens during or after treatment, EMS should be activated.[15,16] Additionally, rectal temperature should be obtained; if >40.5°C (105°F), the patient should be treated for EHS. *Strength of recommendation: C*

Exertional Heat Stroke.

36. For any EHS patient, the goal is to lower core body temperature to less than 38.9°C (102°F) within 30 minutes of collapse.[20] Body cooling serves 2 purposes: returning blood flow from the skin to the heart and lowering core body temperature by reducing the hypermetabolic state of the organs. The length of time the core body (and particularly the brain) is above the critical temperature threshold (40.5°C [105°F]) dictates morbidity and the risk of death from EHS (Figure 2).[57,58] *Strength of recommendation: B*
37. When EHS is suspected, the patient's body (trunk and extremities) should be quickly immersed in a pool or tub of cold water. Removing excess clothing and equipment will enhance cooling by maximizing the surface area of the skin. However, because removing excess clothing and equipment can be time consuming, CWI should begin immediately and equipment should be removed while the patient is in the tub (or while temperature is being assessed or the tub is being prepared).[59] Rectal temperature and other vital signs should be monitored during cooling every 5 to 10 minutes if a continuous monitoring device is not available.[20,60] *Strength of recommendation: B*
38. Cold-water immersion up to the neck is the most effective cooling modality for patients with EHS.[57] The water should be approximately 1.7°C (35°F) to 15°C (59°F) and stirred continuously to maximize cooling. The patient should be removed when core body temperature reaches 38.9°C (102°F) to prevent overcooling (Table 4).[60] *Strength of recommendation: A*
39. Although cooling rates may vary, the cooling rate for CWI will be approximately 0.2°C/min (0.37°F/min) or about 1°C every 5 minutes (or 1°F every 3 minutes) when considering the entire immersion period from postcollapse to 38.9°C (102°F).[20,57,58] *Strength of recommendation: B*
40. If full-body CWI is not available, partial-body immersion (ie, torso) with a small pool or tub and other modalities, such as wet ice towels rotated and placed over the entire body or cold-water dousing with or without fanning, may be used but are not as effective as CWI.[61,62] *Strength of recommendation: B*
41. If a physician is onsite (as in a mass medical tent situation) and can manage the EHS, then transportation to a medical facility may not be necessary if cooling occurred immediately (ie, if the duration above 40°C [104°F] was less than 30 minutes) and the patient is asymptomatic 1 hour postcooling. If a physician is not present but other medical staff (eg, AT, EMS, nurse) are onsite, aggressive cooling should continue until the patient's temperature is 39°C (102.8°F). When medical staff is onsite, all patients with EHS should be cooled first and transported second. However, when medical staff is not present and EHS is suspected, then the coaching

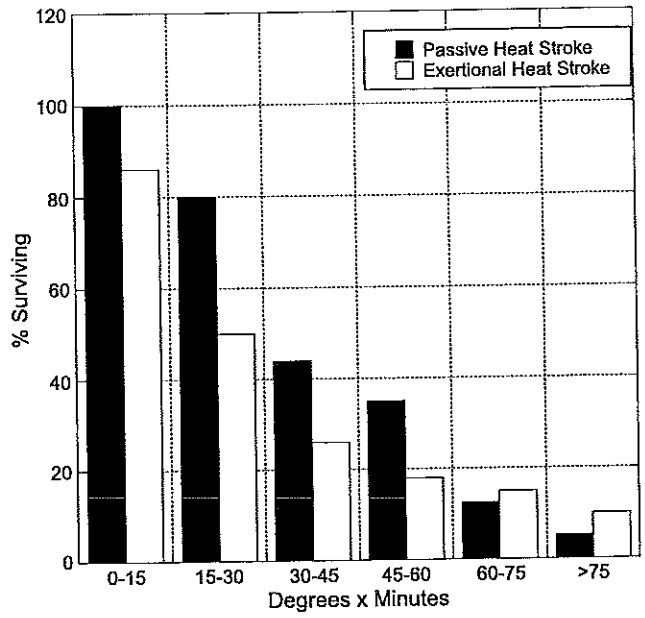

Figure 2. Relationship between severity of hyperthermia and rat survivability. Reprinted with permission. Casa DJ, Kenny JP, Taylor NAS. Immersion treatment for exertional hyperthermia: cold or temperate water? *Med Sci Sports Exerc.* 2010;42(7):1246–1252. Promotional and commercial use of the material in print, digital, or mobile-device format is prohibited without the permission from publisher Wolters Kluwer Health. Please contact lwwjournalpermissions@wolterskluwer.com for further information.

staff/supervisors should implement cooling until medical assistance arrives. *Strength of recommendation: B*

42. Policies and procedures for cooling patients before transport to the hospital must be explicitly stated in an emergency action plan and shared with potential EMS responders so that treatment of EHS by all medical professionals is coordinated (Figure 3). *Strength of recommendation: B*

Return to Activity

43. In cases of EAMCs or heat syncope, the athletic trainer should monitor the patient's condition until signs and symptoms are no longer present. *Strength of recommendation: C*
44. In patients with heat exhaustion, same-day return to activity is not recommended and should be avoided.[15,56] *Strength of recommendation: C*
45. Many patients with EHS are cooled effectively and sent home the same day[63]; they may be able to resume modified activity within 1 month with a physician's clearance. However, when treatment is delayed (ie, not provided within 30 minutes), patients may experience residual complications for months or years after the event. *Strength of recommendation: C*
46. Most guidelines suggest that a patient recovering from EHS be asymptomatic with normal blood-work results (renal and hepatic panels, electrolytes, and muscle enzyme levels) before a gradual return to activity is initiated.[64] Unfortunately, few evidence-based strategies have been developed to determine recovery of the thermoregulatory system,[65] so the medical professional must use clinical cues such as ongoing signs and symptoms, responses to a standard exercise heat-tolerance test, responses to gradually increasing exercise demands, and ability to acclimatize to the heat to make return-to-play decisions. *Strength of recommendation: C*
47. In all cases of EHS, after the patient has completed a 7- to 21-day rest period, demonstrated normal blood-work results, and obtained physician clearance, he or she may begin a progression of physical activity, supervised by the athletic trainer or other medical professional with knowledge of EHS treatment and care, from low intensity

Table 4. Guidelines for Implementing Cold-Water Immersion for a Patient With Exertional Heat Stroke

1. Initial response. Once exertional heat stroke is suspected, prepare to cool the patient and contact emergency medical services.
2. Prepare for ice-water immersion. On the playing field or in close proximity, half-fill a stock tank or wading pool with water and ice (make sure there is a sufficient water source).
   a. The tub can be filled with ice and water before the event begins (or have the tub half-filled with water and keep 3 to 4 coolers of ice next to the tub; this prevents having to keep the tub cold throughout the day.
   b. Ice should cover the surface of the water at all times.
   c. If the athlete collapses near the athletic training room, a whirlpool tub or cold shower may be used.
3. Determine vital signs. Immediately before immersing the patient, obtain vital signs.
   a. Assess core body temperature with a rectal thermistor.
   b. Check airway, breathing, pulse, and blood pressure.
   c. Assess the level of central nervous system dysfunction.
4. Begin ice-water immersion. Place the patient in the ice-water–immersion tub. Medical staff, teammates/coaches, and volunteers may be needed to assist with entry to and exit from the tub.
5. Total-body coverage. Cover as much of the body as possible with ice water while cooling.
   a. If full-body coverage is not possible due to the tub size, cover the torso as much as possible.
   b. To keep the patient's head and neck from going under water, an assistant may hold him or her under the axillae with a towel or sheet wrapped across the chest and under the arms.
   c. Place an ice/wet towel over the head and neck while body is being cooled in the tub.
   d. Use a water temperature under 15°C (60°F).
6. Vigorously circulate the water. During cooling, water should be continuously circulated or stirred to enhance the water-to-skin temperature gradient, which optimizes cooling. Have an assistant stir the water during cooling.
7. Continue medical assessment. Vital signs should be monitored at regular intervals.
8. Fluid administration. If a qualified medical professional is available, an intravenous fluid line can be placed for hydration and support of cardiovascular function.
9. Cooling duration. Continue cooling until the patient's rectal temperature lowers to 38.9°C (102°F).
   a. If rectal temperature cannot be measured and cold-water immersion is indicated, cool for 10–15 min and then transport to a medical facility.
   b. An approximate estimate of cooling via cold-water immersion is 1°C for every 5 min and 1°C for every 3 min (if the water is aggressively stirred). For example, someone in the tub for 15 min would cool approximately 3°C or 5°C during that time.
10. Patient transfer. Remove the patient from the immersion tub only after rectal temperature reaches 38.9°C (102°F) and then transfer to the nearest medical facility via emergency medical services as quickly as possible.

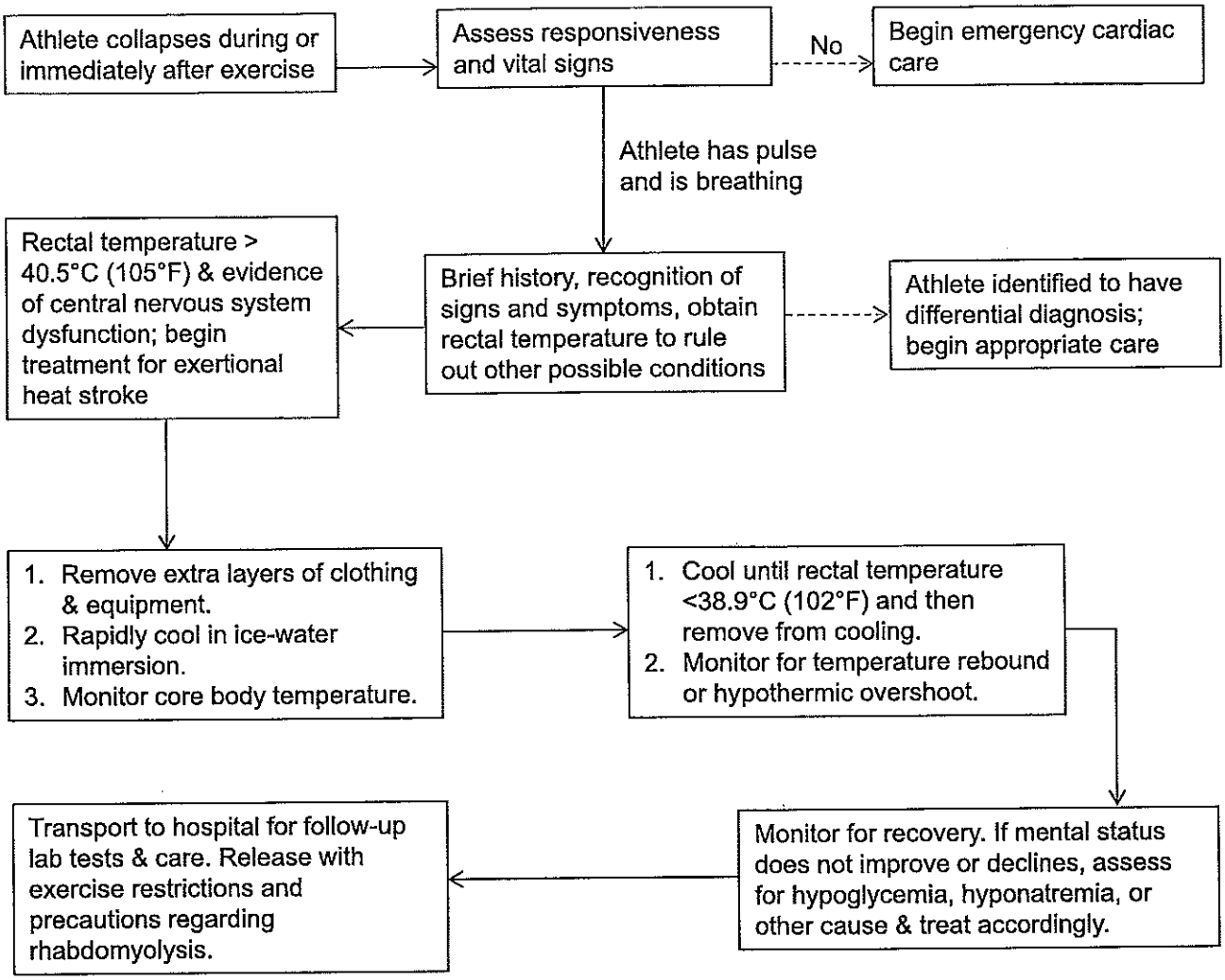

Figure 3. Algorithm for treatment of exertional heat stroke.

to high intensity and increasing duration in a temperate environment, with equipment added gradually where indicated. Also, a graded progression of heat acclimatization, while monitoring for signs and symptoms of EHI, should be completed. The ability to progress depends largely on the treatment provided, and in some rare cases, full recovery may not be possible. Rectal temperature and heart rate should be monitored during these activities, and if the patient experiences any side effects or negative symptoms with training, the progression should be slowed, delayed, or stopped.[65,66] *Strength of recommendation: C*

48. Although structured guidelines for return to play after EHS in athletics are lacking, the US military has adopted effective recommendations for the proper progression of return to duty after an episode of EHS. The main considerations are treating any associated sequelae and, if possible, identifying the cause of EHS, so that future episodes can be prevented.[65–67] As evidence-based medicine research has advanced, the role of exercise heat-tolerance testing has gained favor as a common-sense approach: a patient who has a poor test result should not increase activity at that point. However, the significance of a normal test result and its relationship with clearance to return to play still need to be refined and evaluated. In either circumstance, monitoring the physiologic response to series of challenging exercise heat exposures is a large step forward in our delivery of health care to the EHS patient who is recovering and working toward a return to physical activity as a laborer, soldier, or athlete. This method has proved effective within the Israeli military[68] and the US military and at the Korey Stringer Institute, and it supports many of the considerations put forth by the American College of Sports Medicine and US military.[65,67,69] *Strength of recommendation: C*

BACKGROUND AND REVIEW OF THE LITERATURE

Thermoregulation

Thermoregulation is a complex interaction of the CNS, the cardiovascular system, and the skin to maintain a core body temperature of approximately 37°C (98.6°F).[17,34,70,71] The CNS temperature-regulation center, located in the

hypothalamus, is where the core temperature setpoint is determined. The hypothalamus receives information regarding core body temperature and skin temperature from peripheral skin receptors and the circulating blood. This interaction regulates core body temperature via an open-ended feedback loop similar to a home thermostat system. Based on the peripheral feedback sent to the hypothalamus, the body adjusts accordingly to initiate the appropriate heat-transfer responses. If core temperature falls below the normal setpoint, peripheral vasoconstriction and shivering responses increase core body temperature, whereas if core temperature rises above the normal setpoint, cutaneous vasodilation and increased sweating occur to dissipate heat.[70,71]

Core body temperature is determined by metabolic heat production and the transfer of body heat to and from the surrounding environment by the following heat-balance equation[71]:

$$S = M(\pm \text{work}) - E \pm R \pm C \pm K, \quad (1)$$

where S is the amount of stored heat, M is the metabolic heat production, E is the evaporative heat loss, R is the heat gained or lost by radiation, C is the heat lost or gained by convection, and K is the heat lost or gained by conduction. Basal metabolic heat production while fasting and at absolute rest is approximately 60 to 70 kcal/h for an average adult, with 50% of the heat being produced by internal organs.[72] Metabolic heat produced by intense exercise may approach 1000 kcal/h, with more than 90% of the heat resulting from metabolism in muscles.[72] Heat is further gained or lost by 1 or more of the following mechanisms.[72]

Radiation: Heat is transferred to or from an object or body via electromagnetic radiation (ie, sunlight) from higher to lower energy surfaces.

Conduction: Heat is transferred from warmer to cooler objects through direct physical contact (eg, ice packs).

Convection: Heat is transferred to or from the body to surrounding fluid or air (eg, moving air from a fan or immersion in water).

Evaporation: Heat is transferred via the vaporization of sweat. This is the most efficient means of heat transfer. The evaporation of sweat from the skin depends on the water saturation of the air (ie, humidity level) and the velocity of the moving air (ie, wind speed).[17,30,70–73] The effectiveness of evaporation for heat loss from the body diminishes rapidly when the humidity level is high.

Exercise-Associated Muscle Cramps

The most common EHI experienced by athletes is EAMCs.[74] They afflict adolescents,[9] adult athletes,[7,51,74,75] soldiers, and industrial workers. They are seemingly unpredictable, though affected athletes often report muscle twinges before they experience full-blown, debilitating muscle cramping. Probably because spinal inhibition is weakest when a muscle contracts forcefully while shortened, EAMCs usually occur when muscles are in this position.[76] Although they may occur in any muscle, EAMCs related to muscle overload or fatigue tend to affect exercising (or constantly loaded) muscles, especially those that cross 2 joints in the lower extremities (eg, gastrocnemius, hamstrings).[7] Patients experiencing EAMCs typically display a transient inability to continue normal activity and may have muscle soreness for days postcramping.[50]

Their cause is controversial,[4,10] but a growing body of experimental,[76–79] quasiexperimental,[6–8,51,75] and case[49] studies suggest that EAMCs are not the result of dehydration or electrolyte losses. Although athletes prone to EAMCs may have substantial fluid (2 to 3.4 L/h) and sodium (up to 5 g or far more in a single session) losses,[9,11] the volume of fluid ingested,[11] postexercise body weights,[7,8,11] and gross sweat losses[11] are often comparable with those of noncramping athletes. These findings underscore that such measures (or blood sodium concentration) do not necessarily indicate a whole-body sodium deficit. Potential risk factors for EAMCs consistent across several prospective cohort studies[7,51,75,80] include a history of EAMCs; faster competition performance times; and prior muscle, tendon, or ligament injury. In contrast, stretching history, muscle flexibility, training frequency or volume, height, age, body mass index, weight, and sex tend not to be adequate predictors of EAMC occurrence.[7,51,75,80]

The most effective treatment for acute EAMCs is static stretching of the affected muscle until the cramp subsides.[7,51,53] Stretching reduces the activity of cramping muscles[53] and may relieve cramps by increasing the inhibition produced by the Golgi tendon organs[4,76] or the physical separation of contractile proteins (or both).[53] The effectiveness of chronic or acute static stretching as prophylaxis against future EAMC episodes is unknown. Those patients with EAMCs related to a whole-body sodium deficit must be promptly treated with a high-salt solution, either orally or intravenously. However, it is important to note that this treatment will not result in immediate relief of muscle cramping because of the time necessary to properly absorb sodium.

No well-designed, controlled cohort or experimental studies have compared the effectiveness of EAMC prophylactics, yet some case studies suggest that fluid and electrolyte monitoring and replacement[9] or neuromuscular reeducation[49] may effectively reduce EAMC recurrence.

Hyperthermia and EHS

Signs and symptoms of hyperthermia include dizziness, confusion, behavioral changes, coordination difficulties, decreased cognitive function, reduced physical performance, and collapse.[15,52,69,71,72,81,82] The residual effects of elevated core body temperature depend on the duration, not necessarily the degree, of the hyperthermia.[46,57,69,82] Moderate exercise-induced hyperthermia is normal and even protective in that it triggers the body's thermoregulatory system. However, with EHS (core body temperature greater than 40.5°C [105°F]), long-term neurologic deficits are possible if the condition is not quickly recognized and treated. When EHS is immediately treated via rapid whole-body cooling and core body temperature is normalized within 30 minutes of collapse, a 100% survival rate with limited or no sequelae has been reported.[57,69]

The fastest way to decrease core body temperature is full-body CWI in a pool or tub (with a water temperature between 1°C [35°F] and 15°C [(59°F]).[57,61,69] Timely (less than 30 minutes from the time of collapse) CWI therapy was associated with a 0% fatality rate in more than 2000

Table 5. Example of Wet-Bulb Globe Temperature (WBGT) Guidelines[a]

WBGT Reading	Activity Guidelines and Rest-Break Guidelines
Under 82.0°F (27.8°C)	Normal activities: provide ≥3 separate rest breaks/h of minimum duration 3 min each during workout.
82.0–86.9°F (27.8°C–30.5°C)	Use discretion for intense or prolonged exercise. Watch at-risk players carefully. Provide ≥3 separate rest breaks/h of minimum duration 4 min each.
87.0°F–89.9°F (30.5°C–32.2°C)	Maximum practice time = 2 h. For football: players restricted to helmet, shoulder pads, and shorts during practice. All protective equipment must be removed for conditioning activities. For all sports: provide ≥4 separate rest breaks/h of minimum duration 4 min each.
90.0–92.0°F (32.2°C–33.3°C)	Maximum length of practice = 1 h. No protective equipment may be worn during practice and there may be no conditioning activities. There must be 20 min of rest breaks provided during the hour of practice.
Over 92.1°F (33.4°C)	No outdoor workouts, cancel exercise, delay practices until a cooler WBGT reading occurs.

Guidelines for hydration and rest breaks

1. Rest time should involve both unlimited hydration intake (water or electrolyte drinks) and rest without any activity involved.
2. For football, helmets should be removed during rest time.
3. The site of the rest time should be a "cooling zone" and not in direct sunlight.
4. When the WBGT reading is greater than 86°F (30°C):
   a. Ice towels and spray bottles filled with ice water should be available at the "cooling zone" to aid the cooling process.
   b. Cold-immersion tubs must be available for practices for the benefit of any player showing early signs of heat illness.

Definitions

1. Practice: The period of time that a participant engages in a coach-supervised, school-approved sport or conditioning-related activity. Practices are timed from the time the players report to the field until they leave the field.
2. Walk-through: This period of time shall last no more than 1 h, is not considered to be a part of the practice-time regulation, and may not involve conditioning or weight-room activities. Players may not wear protective equipment.

[a] Example originates from Georgia High School Athletics Association wet-bulb globe temperature guidelines and is only applicable to those who practice, condition, train, or compete under similar environmental conditions. Guidelines should be region specific and based on the following criteria: (1) environmental conditions, (2) intensity of activity, (3) heat-acclimatization status, (4) equipment and clothing, (5) fitness of individual, and (6) age of participants.

EHS patients in athletics and military settings. Other forms of cooling (eg, cold-water dousing with fans, ice-water towels) may be used if CWI is not available, but these methods decrease core body temperature at a slower rate than does CWI.[61,62,69]

Environmental Risk Factors

Environmental Conditions. Hot and humid environmental conditions can more readily predispose an individual to EHS.* When the environmental temperature is higher than the body's skin temperature, individuals absorb heat from the environment, and their heat loss depends entirely on evaporation.[17,30,71,72] Yet when humidity is also high, evaporative heat loss is severely diminished, which can lead to a rapid rise in core body temperature and an extreme risk for EHS (Table 5).

The environmental factors that influence the risk of heat illness include the ambient temperature, relative humidity (amount of water vapor in the air), air motion (wind speed), and amount of radiant heat from the sun. The relative risk of heat illness can be calculated using the WBGT equation:

$$\begin{aligned}\text{WBGT} = &(\text{wet-bulb temperature} \times 0.7)\\ &+ (\text{black-globe temperature} \times 0.2)\\ &+ (\text{dry-bulb temperature} \times 0.1). \qquad (2)\end{aligned}$$

This equation is used to estimate the risk associated with exercise based on environmental conditions and can be useful for setting local policies regarding environmental heat. The WBGT index has long been used in athletics and by the US military. Using the WBGT index to modify activity in high-risk settings has greatly diminished the occurrence of EHS cases in US Marine Corps recruits. However, due to geographical differences among athletic teams and schools across the United States, the WBGT index may not be the most appropriate tool in determining a universal policy for activity modifications and cancellations.[84] Therefore, caution is necessary when setting protocols based solely on climate due to differences among the various regions of the country. It should be noted that an EHI could occur in seemingly "normal" environmental conditions and, therefore, all appropriate precautions should be taken, especially in the first week of practice (Table 6).

Barriers to Evaporative Heat Loss. Athletic equipment and rubber or plastic suits used for weight loss do not allow water vapor to pass from the skin to the environment and, as a result, inhibit evaporative, convective, and radiant heat loss.[27,42,86,87] Participants who wear equipment that does not allow for heat dissipation are at an increased risk for heat illness. Wearing a helmet is also a risk factor because a significant amount of heat is dissipated through the head. Individuals are most susceptible to EHI during the first week of preseason practices.[29,88,89] Thus, it is important to include a phase-in of equipment as part of the heat-acclimatization period.

Wet-Bulb Globe Temperature the Previous Day and Night. When individuals compete in high WBGT conditions, the risk of EHI increases the following day.[91] This factor appears to be one of the best predictors of EHI and should be considered when planning successive practice sessions. Additionally, individuals who sleep in warm or non–air-conditioned quarters are also at greater risk due to the cumulative effects of heat exposure.

Excessive Clothing or Equipment. Excessive clothing or equipment decreases the body's ability to thermoregulate and may cause greater absorption of radiant heat from the environment.

* *References 17, 22, 23, 30, 33, 71, 72, 83, 85*

Table 6. Risk Factors for Exertional Heat Stroke[69,90]

Extrinsic Risk Factors	Intrinsic Risk Factors
High ambient temperature, solar radiation, and high humidity	High intensity of exercise and/or poor physical conditioning
Athletic gear or uniforms	Sleep loss
Peer or organizational pressure	Dehydration or inadequate water intake
Inappropriate work-to-rest ratios based on intensity, wet-bulb globe temperature, clothing, equipment, fitness, and athlete's medical condition	Use of diuretics or certain medications (ie, antihistamines, diuretics, antihypertensives, attention-deficit hyperactive disorder drugs)
Predisposing medical conditions	Overzealousness or reluctance to report problems, issues, or illnesses
Lack of education and awareness of heat illnesses among coaches, athletes, and medical staff	Inadequate heat acclimatization
No emergency plan to identify and treat exertional heat illnesses	High muscle mass-to-body fat ratio
Minimal access to fluids before and during practice and rest breaks	Presence of a fever
Delay in recognition of early warning signs	Skin disorder

Nonenvironmental Risk Factors

Heat Acclimatization. Heat acclimatization is a physiologic response to repeated heat exposure during exercise over the course of 10 to 14 days.[24,25,92] This response enables the body to cope more effectively with thermal stressors and consists of increases in stroke volume and sweat rate and decreases in heart rate, core body temperature, skin temperature, and sweat salt losses.[17,93,94] Athletes should be allowed to acclimatize to the heat sufficiently before stressful conditions such as full equipment, multiple practices within a day, or performance trials are implemented.[16,23,26,27,88] Individual differences affect the onset and decay of heat acclimatization.[24,25] The rate of acclimatization is related to aerobic conditioning and fitness; in general, a better conditioned athlete will acclimatize to the heat more quickly.

Exercise Intensity. The rate of metabolic heat production is clearly a function of the intensity of physical exertion. The relative intensity of exercise, which is based in part on individual physical fitness, has the greatest influence on the rate of increase in core body temperature.[94] From a physiologic standpoint, high-intensity exercise results in a substantial amount of metabolic heat production, which then produces a rapid rise in core body temperature.[95–97] This rapid rise in temperature often exceeds the ability of the body to dissipate heat, ultimately overwhelming the thermoregulatory system. From a behavioral standpoint, individuals will often use an anticipatory defense mechanism and behavioral modifications (eg, slowing their pace) to protect themselves against dangerous levels of hyperthermia.[98,99] However, during competition, the will to win or to accomplish a personal best may trump this internal cue. In addition, external pressure from coaches or teammates may force athletes to ignore this protective instinct.[54,88]

Overzealousness. Overzealous athletes are at higher risk for EHI because they tend to override the normal behavioral adaptations to heat and ignore early warning signs of EHI.[42,88]

Poor Physical Condition. Untrained individuals are more susceptible to EHI than trained individuals because, as aerobic power ($\dot{V}o_2max$) improves, the ability to withstand heat stress generally also improves.[42,44–46] High-intensity exercise can readily produce 1000 kcal/h and elevate the core temperature of at-risk athletes (those who are unfit, overweight, or unacclimatized) to a dangerous level in less than 30 minutes.[94]

Increased Body Mass Index. Obese people are at increased risk for EHI because they are less efficient in dissipating heat and produce more metabolic heat during exercise. Conversely, those who are muscle bound produce increased metabolic heat and have a lower ratio of surface area to mass, contributing to a decreased ability to dissipate heat.[42,100]

Dehydration. Excess sweat loss, inadequate fluid intake, vomiting, diarrhea, certain medications, and alcohol can lead to a measureable fluid deficit. Proper hydration can help to reduce exercise heart rate,[15,34,101–103] fatigue,[12,104] and core body temperature,[105,106] while improving performance[105–107] and cognitive functioning.[81,108–111] Dehydration of as little as 2% of body weight can negatively affect performance and thermoregulation.[32,34] Caution should be taken to ensure that athletes arrive at practice euhydrated (ie, having reestablished their weight since the last practice) and replace body water that is lost during practice. Measuring body-weight change before, during, and after a practice or an event and across successive days is the preferred method for monitoring dehydration in the field. Using a clinical refractometer is another effective method of estimating hydration status: specific gravity should be no more than 1.020 at the start of the activity.[16,31,32,42] Hydration status can also be identified by monitoring the first-void morning urine color via a urine color chart (urine color should be no more than 4).[31,42]

Water loss that is not sufficiently regained by the next practice increases the risk for EHI.[11,27,31,32] Cumulative dehydration develops insidiously over several days and is typically observed during the first few days of preseason practices[112] and in tournament competition. Cumulative dehydration can be detected by monitoring daily prepractice and postpractice body weights and morning urine color. During intense exercise in the heat, sweat rates can be as high as 2 L/h; if the fluid is not replaced, large deficits will result.[27] Therefore, the rehydration rate may have to be increased during exercise periods of this nature in order to minimize fluid deficits.

Illness. Individuals who are currently or were recently ill may be at increased risk for EHI because of fever, dehydration, or medications (eg, decongestants or antidiarrheal agents).[27,42]

History of Exertional Heat Illness. Athletes with a history of heat illness are often at greater risk for recurrent heat illness during strenuous physical activity due to the potential for widespread debilitation involving the thermoregulatory, central nervous, cardiovascular,

musculoskeletal, renal, and hepatic systems.[20,33,42,65–68] However, these long-term effects are markedly reduced if proper treatment is initiated within 10 minutes of collapse.[57] Identifying the cause of the heat illness and making appropriate decisions to correct the cause will decrease the risk of subsequent heat illnesses.[66] Therefore, the clinician's thorough understanding of the common causes and predisposing factors of EHI is extremely important. Addressing these common causes and implementing proper strategies to mitigate their harmful effects may be the most important approach in avoiding EHIs.

Medications and Drugs. Individuals who take certain medications or drugs, particularly those with a dehydrating effect or those that increase metabolic rate, are at increased risk for EHI.[113–116] Medications that have been suggested to have an adverse effect on thermoregulation include stimulants, antihistamines, anticholinergics, and antipsychotics.[116] Approximately one-third of high school football players reportedly used dietary supplements, most for the purpose of increasing muscle mass.[113] Although such substances do not preclude participation, clinicians should recognize that these athletes are at higher risk and ensure adherence to acclimatization and hydration strategies and observe and intervene to protect if the athlete appears to be struggling.

Electrolyte Imbalance. Electrolyte imbalances can occur even in trained, acclimatized individuals who engage in regular physical activity and eat a normal diet. Most sodium and chloride losses occur through the urine, but people with high sweat rates (eg, >2 L/h) and sodium concentrations and those who are not heat acclimatized can lose significant amounts of sodium during physical activity. It is important to emphasize that athletes' meals should replace electrolyte losses and thereby allow them to avoid salt-depletion dehydration. Electrolyte imbalances also commonly arise with the use of diuretics.[117,118]

Hospitalization and Recovery

After an episode of EHS, the patient may experience impaired thermoregulation, persistent CNS dysfunction, hepatic insufficiency, and renal insufficiency.[65–67,119] For persons with EHS and associated multisystem tissue damage, the rate of recovery is highly individualized, ranging up to more than 1 year.[65,119–121] However, evidence indicates that the degree of morbidity is negatively associated with proper recognition and treatment.[69] If EHS is quickly recognized and immediately treated, morbidity and mortality are significantly decreased.

A patient who experiences EHS may have compromised heat tolerance and heat acclimatization even after physician clearance. Additional heat stress may reduce the patient's ability to train and compete due to impaired cardiovascular and thermoregulatory responses.[65,67] After recovery from EHS, an athlete's physical activity should be restricted and the gradual return to sport individualized by a physician. The patient should be monitored daily by the clinician during exercise. During the return to exercise, the patient may experience some detraining and deconditioning not directly related to the EHS. He or she should be evaluated over time to determine if there has been complete recovery of exercise and heat tolerance.

Certified athletic trainers and other allied health care providers must be able to differentiate EAMCs, heat syncope, heat exhaustion, exertional heat injury, and EHS in order to treat these conditions appropriately in athletes. This position statement outlines the NATA's current recommendations to reduce the incidence, improve the recognition, and optimize the treatment of these heat illnesses in athletes. Education and increased awareness will help to reduce both the frequency and severity of heat illnesses in athletes.

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Guideline Summary NGC-9350

Guideline Title

National Athletic Trainers' Association position statement: preventing sudden death in sports.

Bibliographic Source(s)

Casa DJ, Guskiewicz KM, Anderson SA, Courson RW, Heck JF, Jimenez CC, McDermott BP, Miller MG, Stearns RL, Swartz EE, Walsh KM. National Athletic Trainers' Association position statement: preventing sudden death in sports. J Athl Train. 2012 Jan-Feb;47(1):96-118. [207 references] PubMed

Guideline Status

This is the current release of the guideline.

Scope

Disease/Condition(s)

Sudden death in sports caused by the following conditions:

- Asthma
- Catastrophic brain injuries
- Cervical spine injuries
- Diabetes mellitus
- Exertional heat stroke
- Exertional hyponatremia
- Exertional sickling
- Head-down contact in football
- Lightning
- Sudden cardiac arrest

Guideline Category

Diagnosis
Evaluation
Management
Prevention
Screening
Treatment

Clinical Specialty

Cardiology
Emergency Medicine
Family Practice
Pediatrics
Preventive Medicine
Sports Medicine

Intended Users

Allied Health Personnel
Emergency Medical Technicians/Paramedics
Health Care Providers
Physicians

Guideline Objective(s)

- To provide an overview of the critical information for each condition (prevention, recognition, treatment, and return to play [RTP]) and indicate how this information should dictate the basic policies and procedures regarding the most common causes of sudden death in sports
- To guide the development of policies and procedures that can minimize the occurrence of catastrophic incidents in athletes

Target Population

High school and college athletes

Interventions and Practices Considered

1. Establishment of emergency action plans (EAPs), including screening, prevention, recognition, treatment and management of athletes who present with:
   - Asthma
   - Catastrophic brain injuries
   - Cervical spine injuries
   - Diabetes mellitus
   - Exertional heat stroke
   - Exertional hyponatremia
   - Exertional sickling
   - Head-down contact in football
   - Lightning injuries
   - Sudden cardiac arrest
2. Practice and review of the EAP
3. Return to play planning

Major Outcomes Considered

- Sensitivity and specificity of diagnostic screening and assessment tools
- Effectiveness of preventive measures
- Effectiveness of management and treatment

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

PubMed, SportsDiscus, CINAHL were searched from November 2010 to July 2011. The following key terms or most important terms associated with the statement were used: asthma, cardiac conditions, diabetes, exertional heat stroke, exertional hyponatremia, exertional sickling, head injuries, neck injuries, lightning safety, heat stroke, concussion, cardiac arrest, exercise induced asthma, hypoglycemia, sickle cell trait, C-spine injuries, water intoxication. Only top issues related to sport and physical activity were included, issues not related to exercise or physical exertion were excluded.

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Not stated

Rating Scheme for the Strength of the Evidence

Not applicable

Methods Used to Analyze the Evidence

Systematic Review

Description of the Methods Used to Analyze the Evidence

Systematic review of peer-reviewed documents, via PubMed and Medline, Web of Science database searches - asthma

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Current evidence-based practices of clinical trials, expert panels for asthma control and regulations

Rating Scheme for the Strength of the Recommendations

Strength of Recommendation Taxonomy (SORT)

Strength of Recommendation	Definition
A	Recommendation based on consistent and good-quality patient-oriented evidence*
B	Recommendation based on inconsistent or limited-quality experimental evidence*
C	Recommendation based on consensus, usual practice, opinion, disease-oriented evidence*, or case series for studies of diagnosis, treatment, prevention, or screening

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*Patient-oriented evidence measures outcomes that matter to patients: morbidity, mortality, symptom improvement, cost reduction, quality of life. Disease-oriented evidence measures intermediate, physiologic, or surrogate end points that may or may not reflect improvements in patient outcomes (i.e., blood pressure, blood chemistry, physiological function, and pathological findings).

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Peer Review

Description of Method of Guideline Validation

Current evidence-based practices of clinical trials and expert panels

Recommendations

Major Recommendations

The Strength of Recommendation Taxonomy (SORT) (A-C) is defined at the end of the "Major Recommendations" field.

Recognizing the many reasons for sudden death allows health care providers to create and implement emergency action plans (EAPs) that provide detailed guidelines for prevention, recognition, treatment, and return to play (RTP).

The following rules apply to every EAP:

1. Every organization that sponsors athletic activities should have a written, structured EAP. *Evidence Category: B*
2. The EAP should be developed and coordinated with local emergency medical services (EMS) staff, school public safety officials, onsite first responders, school medical staff, and school administrators. *Evidence Category: B*
3. The EAP should be specific to each athletic venue. *Evidence Category: B*
4. The EAP should be practiced at least annually with all those who may be involved. *Evidence Category: B*

Those responsible for arranging organized sport activities must generate an EAP to directly focus on these items:

1. Instruction, preparation, and expectations of the athletes, parents or guardians, sport coaches, strength and conditioning coaches, and athletic directors.
2. Health care professionals who will provide medical care during practices and games and supervise the execution of the EAP with respect to medical care.
3. Precise prevention, recognition, treatment, and RTP policies for the common causes of sudden death in athletes.

Asthma

Prevention and Screening

1. Athletes who may have or are suspected of having asthma should undergo a thorough medical history and physical examination (Weiler, 1996). *Evidence Category: B*
2. Athletes with asthma should participate in a structured warmup protocol before exercise or sport activity to decrease reliance on medications and minimize asthmatic symptoms and exacerbations (Reiff et al., 1989). *Evidence Category: B*
3. The sports medicine staff should educate athletes with asthma about the use of asthma medications as prophylaxis before exercise, spirometry devices, asthma triggers, recognition of signs and symptoms, and compliance with monitoring the condition and taking medication as prescribed. *Evidence Category: C*

Recognition

4. The sports medicine staff should be aware of the major asthma signs and symptoms (i.e., confusion, sweating, drowsiness, forced expiratory volume in the first second [FEV_1] of less than 40%, low level of oxygen saturation, use of accessory muscles for breathing, wheezing, cyanosis, coughing, hypotension, bradycardia or tachycardia, mental status changes, loss of consciousness, inability to lie supine, inability to speak coherently, or agitation) and other conditions (e.g., vocal cord dysfunction, allergies, smoking) that can cause exacerbations (National Heart Lung and Blood Institute [NHLBI], 2010; National Institutes of Health, NHLBI, 2002). *Evidence Category: A*
5. Spirometry tests at rest and with exercise and a field test (in the sport-specific environment) should be conducted on athletes suspected of having asthma to help diagnose the condition (Weiler, 1996; Rundell et al., 2000). *Evidence Category: B*
6. An increase of 12% or more in the FEV_1 after administration of an inhaled bronchodilator also indicates reversible airway disease and may be used as a diagnostic criterion for asthma (American Thoracic Society, 1991).

Treatment

7. For an acute asthmatic exacerbation, the athlete should use a short-acting β_2-agonist to relieve symptoms. In a severe exacerbation, rapid sequential administrations of a β_2-agonist may be needed. If 3 administrations of medication do not relieve distress, the athlete should be referred promptly to an appropriate health care facility (Allen, 2005). *Evidence Category: A*
8. Inhaled corticosteroids or leukotriene inhibitors can be used for asthma prophylaxis and control. A long-acting β_2-agonist can be combined with other medications to help control asthma (Boulet, 1994). *Evidence Category: B*
9. Supplemental oxygen should be offered to improve the athlete's available oxygenation during asthma attacks (Dennis, Solarte, & Fitzgerald, 2008). *Evidence Category: B*
10. Lung function should be monitored with a peak flow meter. Values should be compared with baseline lung volume values and should be at least 80% of predicted values before the athlete may participate in activities (National Asthma Education and Prevention Program, 1997). *Evidence Category: B*
11. If feasible, the athlete should be removed from an environment with factors (e.g., smoke, allergens) that may have caused the asthma attack. *Evidence Category: C*
12. In the athlete with asthma, physical activity should be initiated at low aerobic levels and exercise intensity gradually increased while monitoring occurs for recurrent asthma symptoms. *Evidence Category: C*

Catastrophic Brain Injuries

Prevention

1. The athletic trainer (AT) is responsible for coordinating educational sessions with athletes and coaches to teach the recognition of concussion (i.e., specific signs and symptoms), serious nature of traumatic brain injuries in sport, and importance of reporting concussions and not participating while symptomatic. *Evidence Category: C*
2. The AT should enforce the standard use of certified helmets while also educating athletes, coaches, and parents that although such helmets meet a standard for helping to prevent catastrophic head injuries, they do not prevent cerebral concussions. *Evidence Category: B*

Recognition

3. The AT should incorporate the use of a comprehensive objective concussion assessment battery that includes symptom, cognitive, and balance measures. Each of these represents only one piece of the concussion puzzle and should not be used in isolation to manage concussion. *Evidence Category: A*

Treatment and Management

4. A comprehensive medical management plan for acute care of an athlete with a potential intracranial hemorrhage or diffuse cerebral edema should be implemented. *Evidence Category: B*

5. If the athlete's symptoms persist or worsen or the level of consciousness deteriorates after a concussion, the patient should be immediately referred to a physician trained in concussion management. *Evidence Category: B*

6. Oral and written instructions for home care should be given to the athlete and to a responsible adult. *Evidence Category: C*

7. Returning an athlete to participation after a head injury should follow a graduated progression that begins once the athlete is completely asymptomatic. *Evidence Category: C*

8. The athlete should be monitored periodically throughout and after these sessions to determine whether any symptoms develop or increase in intensity. *Evidence Category: C*

Cervical Spine Injuries

Prevention

1. Athletic trainers should be familiar with sport-specific causes of catastrophic cervical spine injury and understand the physiologic responses in spinal cord injury. *Evidence Category: C*

2. Coaches and athletes should be educated about the mechanisms of catastrophic spine injuries and pertinent safety rules enacted for the prevention of cervical spine injuries. *Evidence Category: C*

3. Corrosion-resistant hardware should be used in helmets, helmets should be regularly maintained throughout a season, and helmets should undergo regular reconditioning and recertification (Swartz et al., 2007). *Evidence Category: B*

4. Emergency department personnel should become familiar with proper athletic equipment removal, seeking education from sports medicine professionals regarding appropriate methods to minimize motion. *Evidence Category: C*

Recognition

5. During initial assessment, the presence of any of the following, alone or in combination, requires the initiation of the spine injury management protocol: unconsciousness or altered level of consciousness, bilateral neurologic findings or complaints, significant midline spine pain with or without palpation, or obvious spinal column deformity (Crosby, 2002; Sanchez II, Sugalski, & LaPrade, 2005; Domeier, Frederiksen, & Welch, 2005; Domier et al., 2002; Holly et al., 2002; Ilda et al., 1999). *Evidence Category: A*

Treatment and Management

6. The cervical spine should be in neutral position, and manual cervical spine stabilization should be applied immediately (Crosby, 2006; Lennarson et al., 2001). *Evidence Category: B*

7. Traction must not be applied to the cervical spine (Turner, 1989; Bivins et al., 1988). *Evidence Category: B*

8. Immediate attempts should be made to expose the airway. *Evidence Category: C*

9. If rescue breathing becomes necessary, the person with the most training and experience should establish an airway and begin rescue breathing using the safest technique (Aprahamian et al., 1984; Gabbott & Baskett, 1997). *Evidence Category: B*

10. If the spine is not in a neutral position, rescuers should realign the cervical spine (Cantu, 1988; De Lorenzo et al., 1996). However, the presence or development of any of the following, alone or in combination, is a contraindication to realignment (Gabbott & Baskett, 1997; De Lorenzo, 1996): pain caused or increased by movement, neurologic symptoms, muscle spasm, airway compromise, physical difficulty repositioning the spine, encountered resistance, or apprehension expressed by the patient. *Evidence Category: B*

11. Manual stabilization of the head should be converted to immobilization using external devices such as foam head blocks (De Lorenzo et al., 1996; Chandler et al., 1992). Whenever possible, manual stabilization (Gerling et al., 2000) is resumed after the application of external devices. *Evidence Category: B*

12. Athletes should be immobilized with a long spine board or other full-body immobilization device. (Johnson, Hauswald, & Stockhoff, 1996; Luscombe & Williams, 2003). *Evidence Category: B*

Equipment-Laden Athletes

13. The primary acute treatment goals in equipment-laden athletes are to ensure that the cervical spine is immobilized in neutral position and vital life functions are accessible. Removal of helmet and shoulder pads in any equipment-intensive sport should be deferred (Donaldson et al., 1998; Prinsen, Syrotuik, & Reid, 1995; Metz, Kuhn, & Greenfield, 1998; Tierney et al., 2002) until the athlete has been transported to an emergency medical facility except in 3 circumstances (Sherbondy et al, 2006): the helmet is not properly fitted to prevent movement of the head independent of the helmet, the equipment prevents neutral alignment of the cervical spine, or the equipment prevents airway or chest access (Donaldson et al., 1998; Prinsen, Syrotuik, & Reid, 1995; Mihalik et al., 2008). *Evidence Category: C*

14. Full face-mask removal using established tools and techniques (Copeland et al., 2007; Gale, Decoster, & Swartz, 2008; Toler et al., 2010) is executed once the decision has been made to immobilize and transport. *Evidence Category: C*

15. If possible, a team physician or AT should accompany the athlete to the hospital. *Evidence Category: C*

16. Remaining protective equipment should be removed by appropriately trained professionals in the emergency department. *Evidence Category: C*

Diabetes Mellitus

Prevention

1. Each athlete with diabetes should have a diabetes care plan that includes blood glucose monitoring and insulin guidelines, treatment guidelines for hypoglycemia and hyperglycemia, and emergency contact information. *Evidence Category: C*

2. Prevention strategies for hypoglycemia include blood glucose monitoring, carbohydrate supplementation, and insulin adjustments. *Evidence Category: B*

3. Prevention strategies for hyperglycemia are described by the American Diabetes Association (ADA) and include blood glucose monitoring, insulin adjustments, and urine testing for ketone bodies (Zinman et al., 2004). *Evidence Category: C*

Recognition

4. Hypoglycemia typically presents with tachycardia, sweating, palpitations, hunger, nervousness, headache, trembling, or dizziness; in severe cases, loss of consciousness and death can occur. *Evidence Category: C*

5. Hyperglycemia can present with or without ketosis. Typical signs and symptoms of hyperglycemia without ketosis include nausea, dehydration, reduced cognitive performance, feelings of sluggishness, and fatigue. *Evidence Category: C*

6. Hyperglycemia with ketoacidosis may include the signs and symptoms listed earlier as well as Kussmaul breathing (abnormally deep, very rapid sighing respirations characteristic of diabetic ketoacidosis), fruity odor to the breath, unusual fatigue, sleepiness, loss of appetite, increased thirst, and frequent urination. *Evidence Category: C*

Treatment and Management

7. Mild hypoglycemia (i.e., the athlete is conscious and able to swallow and follow directions) is treated by administering approximately 10–15 g of carbohydrates (e.g., 4–8 glucose tablets or 2 tablespoons of honey) and reassessing blood glucose levels immediately and 15 minutes later. *Evidence Category: C*

8. Severe hypoglycemia (i.e., the athlete is unconscious or unable to swallow or follow directions) is a medical emergency, requiring activation of EMS and, if the health care provider is properly trained, administering glucagon. *Evidence Category: C*

9. Athletic trainers should follow the ADA guidelines for athletes exercising during hyperglycemic periods. *Evidence Category: C*

10. Physicians should determine a safe blood glucose range to return an athlete to play after an episode of mild hypoglycemia or hyperglycemia. *Evidence Category: C*

Treatment Guidelines for Mild and Severe Hypoglycemia (Mitchell et al., 1988; Hargreaves et al., 1996)

Mild Hypoglycemia	Severe Hypoglycemia
1. Give 10–15 g of fast-acting carbohydrate, e.g., 4–8 glucose tablets, 2 Tbsp honey. 2. Measure blood glucose level. 3. Wait 15 min and remeasure blood glucose level. 4. If blood glucose level remains low, administer another 10–15 g of fast-acting carbohydrate. 5. Recheck blood glucose level in 15 min. 6. If blood glucose level does not return to normal after second dose of carbohydrate, activate EMS. 7. Once blood glucose level normalizes, provide a snack (e.g., sandwich, bagel).	1. Activate EMS. 2. Prepare glucagon for injection, following directions in glucagon kit. 3. Once athlete is conscious and able to swallow, provide food.

Exertional Heat Stroke

Prevention

1. In conjunction with preseason screening, athletes should be questioned about risk factors for heat illness or a history of heat illness. *Evidence Category: C*
2. Special considerations and modifications are needed for those wearing protective equipment during periods of high environmental stress. *Evidence Category: B*
3. Athletes should be acclimatized to the heat gradually over a period of 7 to 14 days. *Evidence Category: B*
4. Athletes should maintain a consistent level of euhydration and replace fluids lost through sweat during games and practices. Athletes should have free access to readily available fluids at all times, not only during designated breaks. *Evidence Category: B*
5. The sports medicine staff must educate relevant personnel (e.g., coaches, administrators, security guards, EMS staff, athletes) about preventing exertional heat stroke (EHS) and the policies and procedures that are to be followed in the event of an incident. Signs and symptoms of a medical emergency should also be reviewed. *Evidence Category: C*

Recognition

6. The 2 main criteria for diagnosis of EHS are (1) core body temperature of greater than 104° to 105°F (40.0° to 40.5°C) taken via a rectal thermometer soon after collapse and (2) central nervous system (CNS) dysfunction (including disorientation, confusion, dizziness, vomiting, diarrhea, loss of balance, staggering, irritability, irrational or unusual behavior, apathy, aggressiveness, hysteria, delirium, collapse, loss of consciousness, and coma). *Evidence Category: B*
7. Rectal temperature and gastrointestinal temperature (if available) are the only methods proven valid for accurate temperature measurement in a patient with EHS. Inferior temperature assessment devices should not be relied on in the absence of a valid device. *Evidence Category: B*

Treatment

8. Core body temperature must be reduced to less than 102°F (38.9°C) as soon as possible to limit morbidity and mortality. Cold-water immersion is the fastest cooling modality. If that is not available, cold-water dousing or wet ice towel rotation may be used to assist with cooling, but these methods have not been shown to be as effective as cold-water immersion. Athletes should be cooled first and then transported to a hospital unless cooling and proper medical care are unavailable onsite. *Evidence Category: B*
9. Current suggestions include a period of no activity, an asymptomatic state, and normal blood enzyme levels before the athlete begins a gradual return-to-activity progression under direct medical supervision. This progression should start at low intensity in a cool environment and slowly advance to high-intensity exercise in a warm environment. *Evidence Category: C*

Exertional Hyponatremia

Prevention

1. Each physically active person should establish an individualized hydration protocol based on personal sweat rate, sport dynamics (e.g., rest breaks, fluid access), environmental factors, acclimatization state, exercise duration, exercise intensity, and individual preferences. *Evidence Category: B*
2. Athletes should consume adequate dietary sodium at meals when physical activity occurs in hot environments. *Evidence Category: B*
3. Postexercise rehydration should aim to correct fluid loss accumulated during activity. *Evidence Category: B*
4. Body weight changes, urine color, and thirst offer cues to the need for rehydration. *Evidence Category: A*
5. Most cases of exertional hyponatremia (EH) occur in endurance athletes who ingest an excessive amount of hypotonic fluid. Athletes should be educated about proper fluid and sodium replacement during exercise. *Evidence Category: C*

Recognition

6. Athletic trainers should recognize EH signs and symptoms during or after exercise, including overdrinking, nausea, vomiting, dizziness, muscular twitching, peripheral tingling or swelling, headache, disorientation, altered mental status, physical exhaustion, pulmonary edema, seizures, and cerebral edema. *Evidence Category: B*
7. In severe cases, EH encephalopathy can occur and the athlete may present with confusion, altered CNS function, seizures, and a decreased level of consciousness. *Evidence Category: B*
8. The AT should include EH in differential diagnoses until confirmed otherwise. *Evidence Category: C*

Treatment and Management

9. If an athlete's mental status deteriorates or if he or she initially presents with severe symptoms of EH, intravenous (IV) hypertonic saline (3% to 5%) is indicated. *Evidence Category: B*
10. Athletes with mild symptoms, normal total body water volume, and a mildly altered blood sodium level (130 to 135 mEq/L; normal is 135 to 145 mEq/L) should restrict fluids and consume salty foods or a small volume of oral hypertonic solution (e.g., 3 to 5 bouillon cubes dissolved in 240 mL of hot water). *Evidence Category: C*
11. The athlete with severe EH should be transported to an advanced medical facility during or after treatment. *Evidence Category: B*
12. Return to activity should be guided by a plan to avoid future EH episodes, specifically an individualized hydration plan, as described earlier. *Evidence Category: C*

Exertional Sickling

Prevention

1. The AT should educate coaches, athletes, and, as warranted, parents about complications of exertion in the athlete with sickle cell trait (SCT). *Evidence Category: C*
2. Targeted education and tailored precautions may provide a margin of safety for the athlete with SCT. *Evidence Category: C*

3. Athletes with known SCT should be allowed longer periods of rest and recovery between conditioning repetitions, be excluded from participation in performance tests such as mile runs and serial sprints, adjust work-rest cycles in the presence of environmental heat stress, emphasize hydration, control asthma (if present), not work out if feeling ill, and have supplemental oxygen available for training or competition when new to a high-altitude environment. *Evidence Category: B*

Recognition

4. Screening for SCT, by self-report, is a standard component of the preparticipation physical evaluation (PPE) monograph. Testing for SCT, when included in the PPE or conducted previously, confirms SCT status. *Evidence Category: A*

5. The AT should know the signs and symptoms of exertional sickling, which include muscle cramping, pain, swelling, weakness, and tenderness; inability to catch one's breath; and fatigue, and be able to differentiate exertional sickling from other causes of collapse. *Evidence Category: C*

6. The AT should understand the usual settings for and patterns of exertional sickling. *Evidence Category: C*

Treatment

7. Signs and symptoms of exertional sickling warrant immediate withdrawal from activity. *Evidence Category: C*

8. High-flow oxygen at 15 L/min with a nonrebreather face mask should be administered. *Evidence Category: C*

9. The AT should monitor vital signs and activate the EAP if vital signs decline. *Evidence Category: C*

10. Sickling collapse should be treated as a medical emergency. *Evidence Category: C*

11. The AT has a duty to make sure the athlete's treating physicians are aware of the presence of SCT and prepared to treat the metabolic complications of explosive rhabdomyolysis. *Evidence Category: B*

Head-down Contact in Football

Prevention

1. Axial loading is the primary mechanism for catastrophic cervical spine injury. *Head-down contact*, defined as initiating contact with the top or crown of the helmet, is the only technique that results in axial loading. *Evidence Category: A*

2. *Spearing* is the intentional use of a head-down contact technique. Unintentional head-down contact is the inadvertent dropping of the head just before contact. Both head-down techniques are dangerous and may result in axial loading of the cervical spine and catastrophic injury. *Evidence Category: A*

3. Football helmets and other standard football equipment do not cause or prevent axial-loading injuries of the cervical spine. *Evidence Category: A*

4. Injuries that occur as a result of head-down contact are technique related and are preventable to the extent that head-down contact is preventable. *Evidence Category: C*

5. Making contact with the shoulder or chest while keeping the head up greatly reduces the risk of serious head and neck injury. With the head up, the player can see when and how impact is about to occur and can prepare the neck musculature. Even if head-first contact is inadvertent, the force is absorbed by the neck musculature, the intervertebral discs, and the cervical facet joints. This is the safest contact technique. *Evidence Category: C*

6. The game can be played as aggressively with the head up and with shoulder contact but with much less risk of serious injury. However, the technique must be learned, and to be learned, it must be practiced extensively. Athletes who continue to drop their heads just before contact need additional coaching and practice time. *Evidence Category: C*

7. Initiating contact with the face mask is a rule violation and must not be taught. If the athlete uses poor technique by lowering his head, he places himself in the head down position and at risk of serious injury. *Evidence Category: C*

8. The athlete should know, understand, and appreciate the risk of head-down contact, regardless of intent. Formal team education sessions (conducted by the AT, team physician, or both with the support of the coaching staff) should be held at least twice per season. One session should be conducted before contact begins and the other at the midpoint of the season. Recommended topics are mechanisms of head and neck injuries, related rules and penalties, the incidence of catastrophic injury, the severity of and prognosis for these injuries, and the safest contact positions. The use of videos such as *Heads Up: Reducing the Risk of Head and Neck Injuries in Football* (National Athletic Trainers' Association, 2006) and *Tackle Progression* (USA Football, 2011) should be mandatory. Parents of high school athletes should be given the opportunity to view these videos. *Evidence Category: C*

Recognition

9. Attempts to determine a player's intent regarding intentional or unintentional head-down contact are subjective. Therefore, coaching, officiating, and playing techniques must focus on decreasing all head-down contact, regardless of intent. *Evidence Category: C*

10. Officials should enforce existing helmet contact rules to further reduce the incidence of head-down contact. A clear discrepancy has existed between the incidence of head-down or head-first contact and the level of enforcement of the helmet contact penalties. Stricter officiating would bring more awareness to coaches and players about the effects of head-down contact. *Evidence Category: B*

Lightning Safety

Prevention

1. The most effective means of preventing lightning injury is to reduce the risk of casualties by remaining indoors during lightning activity. When thunder is heard or lightning seen, people should vacate to a previously identified safe location (National Lightning Safety Institute, 1998; Holle, 2009; Bennett, Holle, & Lopez, 2010). *Evidence Category: A*

2. Establish an EAP or policy specific to lightning safety (Bennett, Holle, & Lopez, 2010; Walsh et al., 2000). *Evidence Category: C*

3. No place outdoors is completely safe from lightning, so alternative safe structures must be identified. Sites that are called "shelters" typically have at least one open side and therefore do not provide sufficient protection from lightning injury. These sites include dugouts; picnic, golf, or rain shelters; tents; and storage sheds (Holle, 2009; Rakov, 2000; Roeder & Vavrek, 2011). Safe places to be while lightning occurs are structures with 4 substantial walls, a solid roof, plumbing, and electric wiring—structures in which people live or work (Holle, 2009; Roeder & Vavrek, 2011). *Evidence Category: B*

4. Buses or cars that are fully enclosed and have windows that are completely rolled up and metal roofs can also be safe places during a lightning storm (Holle, 2008). *Evidence Category: B*

5. People should remain entirely inside a safe building or vehicle until at least 30 minutes have passed since the last lightning strike or the last sound of thunder (Cherington, 2001; Lengyel et al., 2005). *Evidence Category: A*

6. People injured by lightning strikes while indoors were touching electric devices or using a landline telephone or plumbing (e.g., showering). Garages with open doors and rooms with open windows do not protect from the effects of lightning strikes (National Lightning Safety Institute, 2011; Bennett, Holle, & Lopez, 2010; Holle et al., 1995; Duclos & Sanderson, 1990; Uman, 1986). *Evidence Category: B*

Treatment and Management

7. Victims are safe to touch and treat, but first responders must ensure their own safety by being certain the area is safe from imminent lightning strikes (Cooper, 1980; Cooper, "Myths," 1995). *Evidence Category: A*

8. Triage lightning victims who appear to be dead first. Most deaths are due to cardiac arrest (Cooper, 1980; Cooper, "Emergent," 1995; Cooper, 2011). Although those who sustain a cardiac arrest may not survive due to subsequent apnea, aggressive cardiopulmonary resuscitation (CPR) and defibrillation (if indicated) may resuscitate these patients. *Evidence Category: A*

9. Apply an automated external defibrillator (AED) and perform CPR as warranted (Cooper, 2011). *Evidence Category: A*

10. Treat for concussive injuries, fractures, dislocations, and shock (Bernhardt & Roberts, 2010; Roeder & Vavrek, 2011). *Evidence Category: A*

Sudden Cardiac Arrest

Prevention

1. Access to early defibrillation is essential. A goal of less than 3–5 minutes from the time of collapse to delivery of the first shock is strongly recommended. *Evidence Category: B*

2. The preparticipation physical examination should include the completion of a standardized history form and attention to episodes of exertional syncope or presyncope, chest pain, a personal or family history of sudden cardiac arrest or a family history of sudden death, and exercise intolerance. *Evidence Category: C*

Recognition

3. Sudden cardiac arrest (SCA) should be suspected in any athlete who has collapsed and is unresponsive. A patient's airway, breathing, circulation, and heart rhythm (using the AED) should be assessed. An AED should be applied as soon as possible for rhythm analysis. *Evidence Category: B*

4. Myoclonic jerking or seizure-like activity is often present after collapse from SCA and should not be mistaken for a seizure. Occasional or agonal gasping should not be mistaken for normal breathing. *Evidence Category: B*

Management

5. CPR should be provided while the AED is being retrieved, and the AED should be applied as soon as possible. Interruptions in chest compressions should be minimized by stopping only for rhythm analysis and defibrillation. Treatment should proceed in accordance with the updated American Heart Association guidelines, (Field et al., 2010) which recommend that health care professionals follow a sequence of chest compressions (C), airway (A), and breathing (B). *Evidence Category: B*

See also Table 3, "The 12-Element American Heart Association Recommendations for Preparticipation Cardiovascular Screening of Competitive Athletes," in the original guideline document.

Definitions:

Strength of Recommendation Taxonomy (SORT)

Strength of Recommendation	Definition
A	Recommendation based on consistent and good-quality patient-oriented evidence*
B	Recommendation based on inconsistent or limited-quality experimental evidence*
C	Recommendation based on consensus, usual practice, opinion, disease-oriented evidence*, or case series for studies of diagnosis, treatment, prevention, or screening

*Patient-oriented evidence measures outcomes that matter to patients: morbidity, mortality, symptom improvement, cost reduction, quality of life. Disease-oriented evidence measures intermediate, physiologic, or surrogate end points that may or may not reflect improvements in patient outcomes (i.e., blood pressure, blood chemistry, physiological function, and pathological findings).

Clinical Algorithm(s)

An algorithm for asthma pharmacologic management is provided in the original guideline document.

Evidence Supporting the Recommendations

References Supporting the Recommendations

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Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- Appropriate prevention, recognition, and treatment of common conditions that may result in sudden death in sports
- Development of policies and procedures that can minimize the occurrence of catastrophic incidents in athletes

Potential Harms

Not stated

Contraindications

Contraindications

Cervical Spine Injuries

The presence or development of any of the following, alone or in combination, is a contraindication to realignment of the cervical spine: pain caused or increased by movement, neurologic symptoms, muscle spasm, airway compromise, physical difficulty repositioning the spine, encountered resistance, or apprehension expressed by the patient.

Diabetes Mellitus

Exercise is contraindicated when ketones are present in the urine.

Qualifying Statements

Qualifying Statements

The National Athletic Trainers' Association (NATA) publishes its position statements as a service to promote the awareness of certain issues to its members. The information contained in the position statement is neither exhaustive nor exclusive to all circumstances or individuals. Variables such as institutional human resource guidelines, state or federal statutes, rules, or regulations, as well as regional environmental conditions, may impact the relevance and implementation of these recommendations. The NATA advises its members and others to carefully and independently consider each of the recommendations (including the applicability of same to any particular circumstance or individual). The position statement should not be relied upon as an independent basis for care but rather as a resource available to NATA members or others. Moreover, no opinion is expressed herein regarding the quality of care that adheres to or differs from NATA's position statements. The NATA reserves the right to rescind or modify its position statements at any time.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Clinical Algorithm

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Safety

Timeliness

Identifying Information and Availability

Bibliographic Source(s)

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2012 Jan-Feb

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Availability of Companion Documents

None available

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on December 12, 2012. The information was verified by the guideline developer on January 30, 2013.

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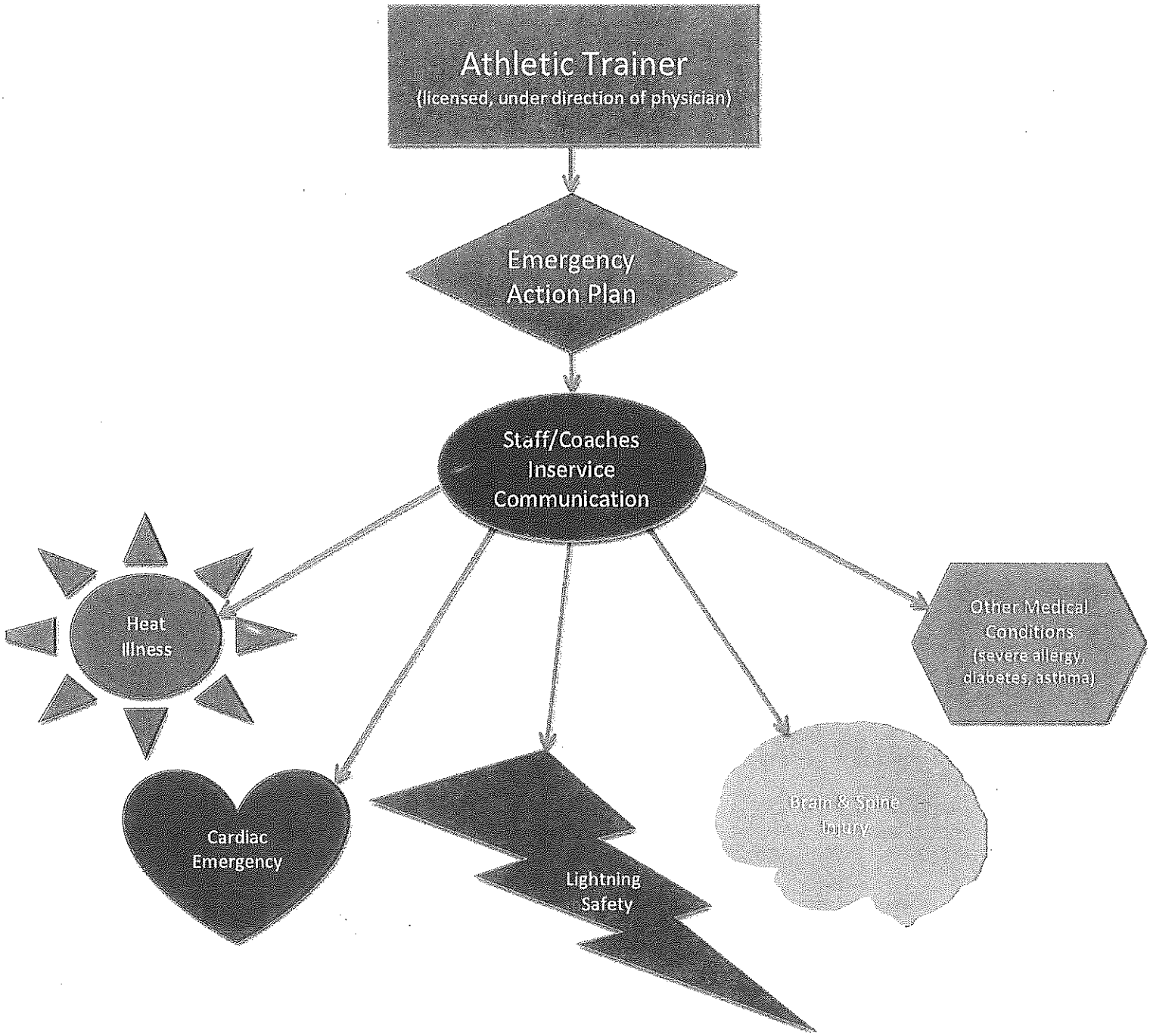

Athletic Trainer
(licensed, under direction of physician)
Emergency Action Plan
Staff/Coaches Inservice Communication
Heat Illness
Other Medical Conditions (severe allergy, diabetes, asthma)
Cardiac Emergency
Lightning Safety
Brain & Spine Injury

ATs REVIVE UNCONSCIOUS MAN DURING CHARITY RUN

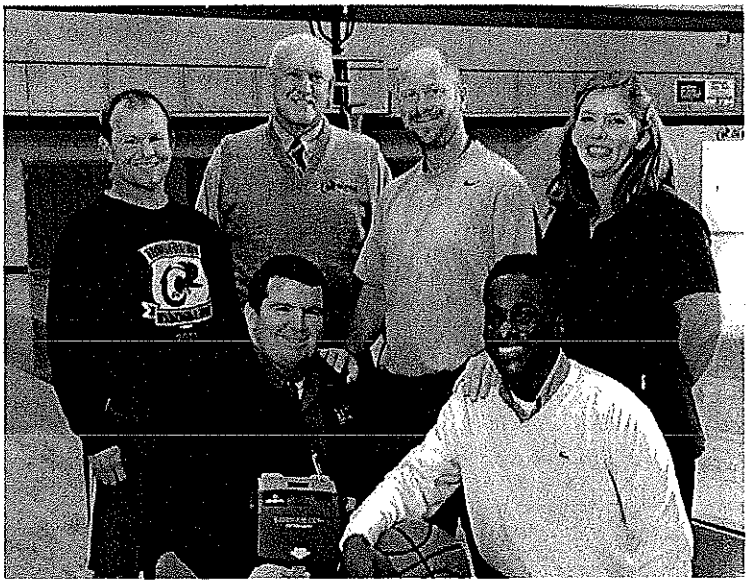
WHO: Matt Reynolds, ATC, and Walter Smith
WHERE: Hammond, La.
WHEN: September 2013

DESCRIBE HOW YOU WERE FEELING WHEN YOU WENT TO TEND TO THE RUNNER DURING THE CHARITY RUN.
He had already collapsed. I thought, if no one is going to help him, I have to go. I didn't think about anything except saving his life. Walter did mouth to mouth and I did chest compressions. He ran to grab the AED, and I administered the shocks.

WHAT DID THE VICTIM SAY/DO UPON BEING REVIVED?
He was speechless. I think he was happy to be back.

WHAT DID YOU LEARN FROM THIS EXPERIENCE? "I was a bit freaked out," Reynolds told SportsNola.com. "But when the AED read that his heart rate was back to normal, that's when I realized I did exactly what I was trained to do."

Randy Wilkes, holding the AED, saved the life of basketball player George Wade.
Photo courtesy of Erlanger Health System



SENIOR BASKETBALL PLAYER SAVED AFTER COLLAPSING AT PRACTICE

WHO: Randy Wilkes, MS, ATC
WHERE: Chattanooga, Tenn.
WHEN: January 2013

Ooltewah High School athletic trainer Randy Wilkes was going over a student-athlete's post-concussion assessment with the boy's mother, the school nurse, when the PE coaches called for him. Senior basketball player George Wade, who was "kind of known as the class clown," was on the floor.

"Everyone thought it was a joke at first, but when we got there he wasn't conscious and he was bleeding from face planting on the ground," Wilkes said. "The nurse came out there with me and couldn't find a pulse, so we immediately went into CPR." The AT said he didn't particularly "feel" anything in the heat of the moment. "You kind of go numb and do what you're supposed to do, so you don't feel much until afterwards," he said.

Wilkes and the nurse performed basic CPR but ended up administering two shocks with the AED, which was retrieved by a coach from another building located roughly 200 yards from the gymnasium. Wade never regained consciousness at the scene. "After a couple minutes of rescue breathing he started breathing on his own," Wilkes said. "Probably two minutes after that EMS got there, so he never regained consciousness until the next day."

Wilkes said he's glad Wade is still alive, but said sometimes he has trouble feeling like he had a hand in saving the boy's life. "I'm happy I was there to help him and knew what to do, but it's something you want to keep to yourself," he said humbly.

THE LIFE SAVER ISSUE

Monica Jackson (center) poses with the family of the man she resuscitated.

SPECTATOR SAVED IN TEXAS

WHO: Monica Jackson, MS, LAT
WHERE: Pearland, Texas
WHEN: Feb. 19, 2013

Monica Jackson of Manvel High School (League City, Texas) was covering a girls' basketball playoff game at Dawson High School (Pearland, Texas) when a man collapsed in the stands. Jackson arrived at his side quickly and was joined by a doctor who happened to be watching the game. Not finding a pulse, she asked a police office to bring the AED.

"In 12 years, I had never administered an AED on a living human being," Jackson said. Having completed and taught AED training every year, she knew exactly what to do. "It's like clockwork. You don't really have an emotion. You just go through each step automatically."

Though Jackson had never worked with that doctor before, everything fell together smoothly. They administered CPR, and the victim's pulse returned. At that time EMS arrived and took over transporting the man to the hospital. Within seconds, the man was loaded into the ambulance and whisked away for further medical care.

Through it all, Jackson remained calm and composed. She spoke with the victim's relative and alerted the school's AT about using the AED. It wasn't until the game was over and her team was situated that the magnitude of the situation finally hit Jackson. Alone in her car, she was overtaken by emotion. "You have to stay composed when it's all happening, but when you're alone it hits you. It was overwhelming."

Though she's always been diligent about her AED training, she says it has taken on an even greater level of importance. "Now when I hear the AED start talking during those trainings, the hair on the back of my neck stands up."

DESCRIBE HOW YOU WERE FEELING WHEN YOU SAW UTAH STATE BASKETBALL PLAYER DANNY BERGER COLLAPSE. I was at the other end of the court when he collapsed. As I ran down there my first thought was a seizure, but he had no history of anything heart- or seizure-related. The first thing I did was say, "Are you ok?" He was taking a gasping breath, so I had coaches call 911 and yelled for an AED. At that point he quit breathing, and I lost his pulse. I started CPR and put on the AED, which was there within 30 seconds.

DID EVERYTHING GO RELATIVELY SMOOTHLY? It was pretty textbook. I don't know if that was preparation or what, but our ambulance in Logan is housed right on campus, so it was right there. I did CPR and the AED, which shocked him and at that point campus police arrived. Within a minute the ambulance arrived. The student manager had actually left to go get the AED before I yelled for it. Everyone in the gym knew it was serious thing, so everyone did what was asked and responded extremely well.

DO YOU REMEMBER WHAT THE VICTIM SAID UPON BEING REVIVED? We put him in ambulance and sent him to Logan Regional Hospital, then we life-flighted him down to Salt Lake. He was there for a few days but actually regained consciousness the next day; it happened Tuesday, so he became conscious Wednesday.

HOW DO YOU FEEL ABOUT THE FACT THAT A PERSON IS STILL AROUND TODAY IN PART BECAUSE OF YOUR ACTIONS? It was a team effort for so many things, from the student manager, to the EMTs, to Logan Regional Hospital. I realize what I did was critical at the time, but after the initial response, there's still so much more that goes on and needs to go right for [the patient] to actually survive. I've never looked at it like I did this, but more like we did this – and that's something we're proud of.

Maria Rosanelli poses with Sterling Staffin and his mother.
Photo by Vernon Bryant/Dallas Morning News

We were in the AT office and it was a half-day. I just remember one of the baseball coaches called my cell and said one of the kids got hit by a car. I got the Gator and drove down as fast as I could. When I got there, 16-year-old Sterling Staffin was kind of on his side, having a seizure. His mom was next to him, screaming, and there were kids all around. I was trying to be nice but firm, telling his mom to get off of him.

I had the AED next to me just in case, and soon the EMS arrived. Sometimes it feels like a lifetime for them to arrive, but they were there pretty quickly. I didn't want to let go of him until they were right there. When I got him over on his back, he was in shock, freaking out and wanted to get off the ground. I repetitively called his name and told him to look at me and breathe.

I don't feel like I did anything out of the ordinary. It's what we do as athletic trainers; we're there to help in any situation. I'm glad that he's here and the worst case scenario didn't come up. It's also kind of sad because he's not playing baseball and still having some trouble concentrating and focusing. While it's upsetting to see that, I'm glad he's still functioning and living.

- Maria Rosanelli

AT SAVES ELDERLY MAN IN PARKING LOT

WHO: Justin Bolton, ATC, LAT, EMT
WHERE: Wolcott, Conn.
WHEN: May 16, 2013

Justin Bolton was covering a baseball game at Wolcott High School when his athletic director called to tell him about a man who had collapsed in the school parking lot.

There was already an EMT onsite, so Bolton raced back into the building to grab the AED. Once he returned, they hooked him up to the AED and gave him two shocks. His heart rate returned, so Bolton began doing rescue breaths. Soon, the man had regained consciousness.

"I went back to the basics," Bolton said. "I did what we're taught to do. It wasn't until afterward that it all hit me, and I got jitters thinking about it. I thought, 'Wow, this guy was actually dead and we saved his life.'"

Bolton later found out the man already had a defibrillator, but that it malfunctioned that day. The man was fortunate to be found by two girls who were walking by in an empty area of the parking lot, and he was even more fortunate that Bolton was onsite to save his life.

"I learned a little bit about myself," Bolton said. "I learned that I will react the way I'm supposed to and that I have what it takes to save someone's life. I feel more comfortable and confident now that I know that about myself."

UTAH STATE BASKETBALL PLAYER REVIVED AT PRACTICE

WHO: Mike Williams, MS, ATC
WHERE: Logan, Utah
WHEN: Dec. 4, 2012

THE LIFE SAVER ISSUE

"As people started telling me about these two amazing women who saved my life, it became clear that I was the luckiest man in the world," Paxton told Stephen F. Austin University's *The Pine Log*. "It was better than winning the lottery."

back of his head. The victim's wife, Sonja, was sitting in the passenger seat and told Bobo she thought her husband, 53-year-old Mark Paxton, had suffered a heart attack. Initially unable to remove the 6'2", 250-pound man from his car, Bobo reclined his driver seat. "As far as providing actual care, that was fine ... but we were in the middle of a highway, we couldn't immediately get him out of the car due to traffic, nor were we physically able to move him right away," said Benson. They quickly assumed their CPR roles, Bobo doing chest compressions and Amanda in the back seat doing the rescue breaths. On the fifth cycle, Paxton became conscious and the ambulance arrived. "It took the ambulance 10 minutes to show up," Bobo said. "We knew he would have been dead or brain dead."

"As people started telling me about these two amazing women who saved my life, it became clear that I was the luckiest man in the world," Paxton told Stephen F. Austin University's The Pine Log. "It was better than winning the lottery."

Benson said it's hard to put in words the feeling of having saved a life. "Occasionally [Mark] will call, and it catches me off-guard but it also makes [me] feel grateful: He's a father, husband and son, and for him to be able to fill all of those capacities because of your actions is relatively indescribable."

"WE WERE ALL TRAINED THE SAME"

WHO: Brett Waldon, ATC, with assistance from Southern Nazarene University's AT staff
WHERE: Bethlehem, Okla.
WHEN: Feb. 2, 2013

DESCRIBE WHAT HAPPENED WHEN BASKETBALL PLAYER JEFF REESE COLLAPSED DURING THE GAME.
He came off the court complaining of shortness of breath and sat at the edge of the bench. It slowly got worse from there. He said he was thirsty, so he got a drink of water and that helped a little bit, but he complained about his chest. I did two sternal rubs and he came around, but then he went into a slump. Sternal rubs didn't work, so then I pulled him off the chair onto the floor behind me.

DID EVERYTHING GO RELATIVELY SMOOTHLY?
Everything went smoothly because were all trained the same, even though we were trained separately. We did five rounds of CPR and administered three shocks from the AED. It was roughly five or six minutes that we worked on him.

HAVE YOU SPOKEN TO HIM SINCE YOU TREATED THEM THAT DAY?
Several times; I actually spoke to him yesterday. He's doing much better. [After the incident] they implanted a defibrillator and he's had a few setbacks since then, but overall he's adjusted well.

WHAT DID YOU LEARN FROM THIS EXPERIENCE?
I think it just confirms my concern to always carry my AED when I travel so it's readily accessible when I need it. By having those fears and concerns, I didn't have to find it or ask anyone to go get it, and I didn't have to familiarize myself with it.

ROSANELLI TO THE RESCUE

WHO: Maria Rosanelli, MEd, ATC, LAT
WHERE: Dallas, Texas
WHEN: January 2013

unresponsive, the first thing I did was try to assess the situation; when he wasn't responding, my first thought was to get the AED. At first he was moving around like he was almost having seizure... Once he began to almost lie motionless, the [student with the] AED was there. I had three AT students onsite: One was calling 911, one was supporting me with CPR and one was handling the AED. It's something you prepare for and know is a possibility, but something you hope never happens.

DID EVERYTHING GO RELATIVELY SMOOTHLY, OR WERE THERE TIMES THAT REQUIRED IMPROVISING? I went over our emergency action plan (EAP) the first week of practice with the students, so we already had one in place. While I was directing students and coaches to make sure others stood back, the other baseball team was moving things out of the way, making room for the ambulance. Luckily, CPR only lasted about 90 seconds and then he came right back, so the excitement was rather short lived – but having that positive outcome was most reassuring.

WHAT DID YOU LEARN FROM THIS EXPERIENCE? The importance of having an EAP in place so that everyone who could potentially be there – students, coaches, administrators – is prepared, so if a situation came about you'd know exactly what to do and how to react [because] you've been replaying those drastic scenarios in your head before they happen.

HOW DO YOU FEEL ABOUT THE FACT THAT A PERSON IS STILL ALIVE IN PART BECAUSE OF YOUR ACTIONS? It takes a while to sink in I think. After several weeks and communication with the athlete and parent, and after finding out what actually happened and what it means to them, then it starts to sink in. In my initial first two weeks [after the incident], we were still running tests and figuring out what happened, so I was in the dark a little bit. After you get documentation and speak to doctors and they explain that if you didn't do what you did at that time, [the person] wouldn't be here right now, it becomes more impactful and surreal.

SENIOR SAVED OUTSIDE OF STARBUCKS

WHO: Amber Marlett
WHERE: Fort Worth, Texas
WHEN: Sept. 19, 2013

As a pre-game day ritual, I always get my Starbucks Frappuccino. As I was exiting, to the right [of the Starbucks] there's a senior center building. A man had collapsed on the ground and there was another man above his head checking for a pulse. He said, "Does anyone know CPR?" I didn't even think about anything, I just ran over, dropped all my stuff and I started doing chest compressions – and I'd never done chest compressions other than on a mannequin, but I've been CPR-certified since I was 16.

The whole thing is still a blur to me. I checked in with my preceptor and let him know I was going to be late to class because I kind of just gave CPR. We only have about eight people in our class, and we were learning how to take blood pressure. When they took mine, it was just through the roof.

I think the man [who was doing CPR] might have been a doctor because he was giving demands pretty well. After he gave three or four breaths, the guy woke up and was holding his heart. He tried to sit up. The other man said "No, lay down, we called help and they're on their way." I didn't speak to him afterward. I just cared that he was alive and well.

I really thought it wasn't that big of a deal; I was just doing what I'd been taught, like a Good Samaritan, because I'd want someone to do that for me.

-Amber Marlett

NO NEED FOR WORDS

Linda Bobo (left) and Amanda Benson had dinner with Mark Paxton nine months after saving his life.

WHO: Linda Bobo, PhD, ATC, LAT, and Amanda Benson, PhD, ATC
WHERE: Dallas, Texas
WHEN: January 2013

Those who attended the 2013 ATEC/iLEAD conference in Dallas may remember a rumor buzzing around about two athletic trainers who saved a life during the event. Those two were Linda Bobo and Amanda Benson, educators at Stephen F Austin State University and Troy University, respectively, who had witnessed a large SUV rear-end a sedan and decided to stop. Suddenly the Suburban accelerated, pushing the car in front toward the intersection. Benson ran to pull the sedan's emergency brake while Bobo hopped into the SUV.

"I don't think we 'thought,' it was just so robotic," Benson said. "You sort of go into autopilot mode; what was so unique was there was never any communication [between us]." Bobo saw the victim's face had turned purple and his eyes had rolled to the

THE LIFE SAVER ISSUE

I was at my cousin's birthday party at a busy hotel pool. We were goofing around, and my nephew wanted to use the slide. I was walking toward the base of the slide to catch him when something caught my eye at the bottom of the pool. Once I got closer I saw it was a child, but I assumed she was playing. I nudged her with my foot, but I didn't get any response. I reached down and picked her up.

She was blue in the face. No breathing, no life. My first thought was that I just found a dead girl. It did not look good.

My mind was racing a mile a minute, and I immediately called for help. I carried her to the edge of the pool where her mom was waiting. They had been looking for their daughter and had no idea she was in the pool. Her mother grabbed her from me and immediately began to perform CPR. I looked for a pulse and soon took over the CPR. The little girl started coughing and spit up some water, and she began to cry. That was the best sound we could have heard. At that point we knew she would probably be OK.

Once the ambulance took her away, everyone was congratulating me and telling me I was a hero. "Thank goodness you were here today," they told me. I was so mentally drained that I had no energy left at all. Once I rested a little bit, it finally hit me: "Wow, that just happened."

It makes you realize that even with all the training, everything feels much different in the situation. When adrenaline kicks in, you have to go by training and instinct. It's given me more confidence that I can handle these types of situations.

- Justin Bueligen, MS, ATC

BRAVERY IN BOSTON

WHO: More than 100 athletic trainers and AT students
WHERE: Boston, Mass.
WHEN: April 15, 2013

Despite the tragedy and terrorism that surrounded the 2013 Boston Marathon, the day was also filled with stories of courage, hope and heroism. The 100+ athletic trainers and AT students who volunteered at the race remained calm amidst the chaos, running toward the explosions instead of away from them. From quickly tending to victims and assisting EMTs in medical tents to pushing wheelchairs and gathering supplies, the athletic training volunteers – along with the entire Boston Marathon medical staff – ensured that no more lives were lost that day. Read in-depth coverage of the Boston Marathon AT volunteers in the July 2013 issue of *NATA News*.

"SOMETHING YOU HOPE NEVER HAPPENS"

Bryan White (left) with his AT students

WHO: Bryan White, ATC
WHERE: Salisbury, Md.
WHEN: February 2013

DESCRIBE HOW YOU WERE FEELING IN THE MOMENT YOU SAW PITCHER ZACH LUCAS COLLAPSE. I wouldn't say it was fear, but your instincts start to take over immediately. As I went over there and saw the pitcher was

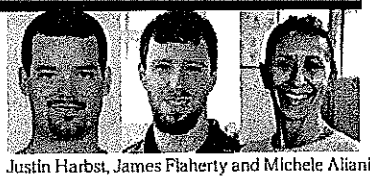
court. Parker sprinted to the practice and found the player lying on the ground, unconscious. Her coach and teammates said she was having convulsions or some sort of seizure, so they had placed her in the recovery position. She wasn't breathing.

A member of the athletics staff raced to get the AED. Parker and Deb Springer, MA, ATC, a member of the AT faculty, worked together to save the athlete. They delivered the shock and did a couple rounds of CPR, and then she began breathing on her own. She remained unconscious. At this point the paramedics had arrived, so they took over. "You practice and practice for this scenario, but you hope you never have to do it. It was like, 'Wow, this is really happening,'" Parker said. "You're not thinking about the severity of the situation. You're on autopilot based on all of your training."

Doctors later determined the volleyball player had an irregular heartbeat and estimated her chances for survival were 8 percent. Thanks to Parker and Springer, she didn't fall into the 92 percent who usually die from this type of incident. "It hits you a couple hours later," Parker said. "During quiet moments, you're replaying all the steps in your mind."

Though Parker hopes there isn't a "next time," he hopes to add some improvements to the training plans just in case. "We've learned that all of our coaches are not AED and CPR certified, so we're moving toward trying to accomplish that. If this happens again, someone else could at least start applying the AED and wouldn't have to waste precious seconds going to find an athletic trainer."

PATIENT COLLAPSES IN PT CLINIC



Justin Harbst, James Flaherty and Michele Aliani

WHO: Michele Aliani, ATC, PT, CSCS; Justin Harbst, ATC; James Flaherty, ATC
WHERE: Great Neck, N.Y.
WHEN: December 2012

DESCRIBE WHAT YOU WERE FEELING WHEN THE PATIENT LOST CONSCIOUSNESS AND STOPPED BREATHING. You just react to what's going on, assess what's happening and why. We were all working together. The patient started to feel a little bit lightheaded so we walked him back and got him onto the treatment table. Once he went out, Justin gave him some rescue breaths pretty quickly; then he kind of came back.

HOW DO YOU FEEL ABOUT THE FACT THAT A PERSON IS STILL AROUND TODAY IN PART BECAUSE OF YOUR ACTIONS? Well, it turns out he had several pulmonary embolisms, although first we thought it was his heart. Collectively we all realized there were very few places he could've been where he still would've been alive. When he came back to the office after leaving the hospital, you could see how grateful he and his wife were. It's a really good feeling.

DID YOU LEARN ANYTHING? Anytime you're in a situation like that you learn what you could've done better. In terms of how we handled him, there wasn't much more we could've done. One adjustment we've made is our emergency response: We go directly to the local fire department rather than calling 911, because they're a lot closer.

DROWNING CHILD RESCUED BY AT

WHO: Justin Bueligen, MS, ATC
WHERE: Bismarck, N.D.
WHEN: April 2013

LIFE SAVER

A PLAN IN PLACE WHEN SOMEONE GOES DOWN

Ellen Bastoni (center)

WHO: Ellen Bastoni, ATC
WHERE: Eastchester, N.Y.
WHEN: February 2013

It was a girls' varsity basketball game and I was sitting on the end of the bench. It was the first year [EHS] had had an athletic trainer in a couple years. When [the official collapsed] my athletic director, Jason Karol, actually got to him first because he was closer. As he began to assess the official, I ran to get the AED. For never practicing it together, we seemed to go through the motions pretty well. My AD was a certified CPR instructor, so that definitely made a big difference.

The AED was mounted on the wall right outside the gym, maybe 10 feet from where the official fell. I was able to grab it and be back within a matter of seconds.

[The official] had fallen straight backward and hit the back of his head, so he had quite a bit of bleeding and was pretty out of it. He murmured a little bit but was breathing on his own, and a few seconds later the ambulance showed up. By then he was conscious and responsive.

I'm so thankful that we had a plan in place ... It was kind of ironic because earlier that day my AD was telling our spring coaches to make sure to have an AED if you're offsite, and we went over our whole emergency plan. This shows why it's important to be prepared.

-Ellen Bastoni

had four athletic training students with me at the time – to see what his condition was initially. He was still breathing, but shortly after that he lost full consciousness and breathing, so I initiated CPR and yelled for an AED.

DO YOU REMEMBER WHAT THE VICTIM SAID UPON BEING REVIVED? He continuously stated "Help." He said he'd woken up from a nightmare ... He was looking around for a gentleman and yelled out someone's name who was there at that game – probably the closest person he knew who was there.

HAVE YOU SPOKEN TO THE PERSON SINCE YOU TREATED THEM THAT DAY? We went to visit him a few days later in the hospital and his wife was there. I did get a letter from his family a few weeks afterward thanking us for allowing him to be with family for Christmas, and that was really touching. And [Moreau] is still refereeing – he's working the soccer games this fall.

HOW DO YOU FEEL ABOUT THE FACT THAT A PERSON IS STILL AROUND TODAY IN PART BECAUSE OF YOUR ACTIONS? I'm just grateful we were able to save his life. People save lives every day; I'm just happy the outcome was what it was, and he's able to live his life.

BY A HEARTBEAT

WHO: Kevin Parker, ATC
WHERE: Grand Rapids, Mich.
WHEN: Sept. 9, 2013

Kevin Parker, ATC, was in the AT facility at Aquinas College when two volleyball players ran in to tell him their teammate was down on the

THE LIFE SAVER ISSUE

AT SPRINGS INTO ACTION TO RESUSCITATE ATHLETE'S FATHER

WHO: Amanda Tiffany, ATC
WHERE: Westchester, N.Y.
WHEN: May 1, 2013

I was on the sidelines of a lacrosse field when two students ran over to tell me a man had collapsed. His daughter was playing softball at our school and he was walking toward the field. I ran to grab the AED and raced to him. I jumped the fence and threw the AED over. The visiting lacrosse coach was there, along with a police officer. His wife was also there. I just opened the AED and immediately put the pads on his chest. It did indicate a charge and shock, and then I started doing CPR after that.

He was never fully conscious or anything. He began to make a lot of noise after three or four rounds of compressions, and he was clearly in a lot of pain even though he was unconscious. We got a pulse.

It's interesting because you train for [these situations] over and over so many times, but if you've never done it before there is always this question of what's going to happen. I wasn't even thinking that it was not going to work. I didn't think beyond that until afterward. You just focus and go into your training.

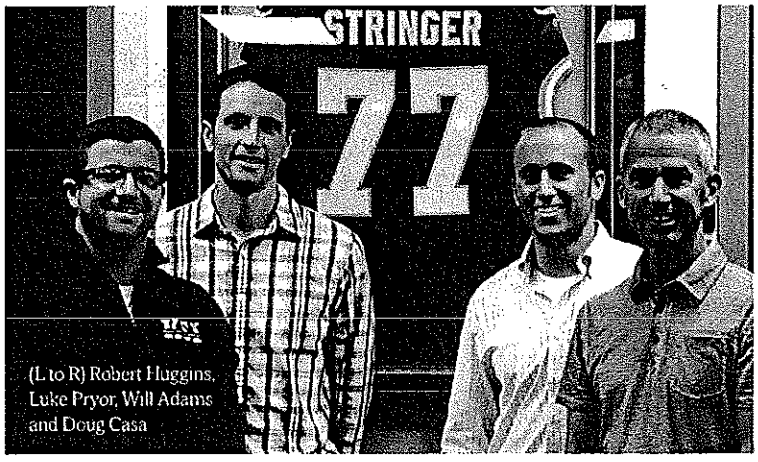
When I was talking to his wife, it really hit me. You're in the moment, and your training kicks in... I'm very grateful for my training and for my equipment we now have. When I started this job, we didn't have AEDs. I wonder what this scenario would be like without one. I'm just grateful everyone was focused on the same goal and everything came together. It's very gratifying when it works the way it's supposed to.

- Amanda Tiffany, ATC

THREE LIVES SAVED AT MASSACHU-SETTS ROAD RACE

WHO: Robert Huggins, MEd, ATC; Luke Pryor, MS, ATC; and Will Adams, MS, ATC
WHERE: Falmouth, Mass.
WHEN: Aug. 11, 2013

Every year, athletic trainers from the Korey Stringer Institute at the University of Connecticut volunteer at the Falmouth Road Race. Held during the heat of August, the race is a great place for the KSI to continue its groundbreaking



(L to R) Robert Huggins, Luke Pryor, Will Adams and Doug Casa

research on heat illness. Not only do they collect research data at the race, but they also work the medical tents. At the 2013 race, the heat was so extreme that the medical team had to work quickly to save the lives of three runners suffering from severe cases of heat exertion.

Robert Huggins, MEd, ATC, was working the medical tent when a runner was brought in with a rectal temperature of 107.7 degrees Fahrenheit. His situation was dire. "He looked me straight in the eyes and asked me if he was going to die," Huggins said.

Huggins immediately immersed him in an ice water tub. The runner was disoriented and slightly combative, which Huggins said is a symptom of his unnaturally high body temperature. "It's almost like dealing with a drunk person," Huggins described. "They can be extremely aggressive and you have to hold them down. Their regulatory function shuts off and the brain doesn't process correctly."

After 20 minutes in the ice bath, the runner's temperature was down to 103.3; however once he was removed from the tub, his temperature began to rise to dangerous levels again. After another session in the ice tub, the runner's temperature came down to 102. A life-threatening crisis had been averted.

Meanwhile, Will Adams, MS, ATC, was treating an incoming high school senior who had just finished the race. Her body temperature was a very dangerous 107.5 degrees, so they worked quickly to cool her body in the ice bath. She thought she was going to die, so Adams worked hard to keep her calm and reassure her that she would be OK. "That's what they always say on Grey's Anatomy when the patient is about to die," she said to Adams. "News flash: I'm going to be the fourth teenager to die in the Cape this year," she told him. Once her temperature came down to normal levels, the young runner had no recollection of anything she'd said during treatment. Thankfully, she lived to laugh about it later.

"It wasn't until I was talking to her mother about what happened that it really hit me, the gravity of the situation," Adams said. "It was a good thing we were there that day or things would have gone a lot differently for her."

Luke Pryor, MS, ATC, was tending to an athlete who had attacked the last mile of the 10K race with all his strength, causing his temperature to rise to more than 108 degrees. The man was slightly more heavyset than your average runner and had just returned to the sport a little more than a month prior to the race. Pryor would later find out. The runner was disoriented and had no idea where he was, so Pryor and the team worked quickly to immerse him in the ice water tubs. Closely monitoring the man's temperature, Pryor realized he was not cooling off quickly enough. It was a very precarious situation. Soon five of the ATs nearby joined the effort, dipping their arms into the man's ice bath and stirring it vigorously to eliminate the thermal pane between the warm body and cold water. Eliminating this temperature barrier allows the cold water to reach the body faster, cooling the victim at a quicker pace. In this case, they needed all the speed they could get to save the man's body from succumbing to the heat exertion.

In all three incidents at the Falmouth Road Race, the athletic trainers followed best practices and used the pre-race protocol that had been established in case of heat illness. They drew upon their training and experience to save the lives of three grateful runners that day. The runner that Huggins treated was so appreciative that he wrote a very moving testimonial about the treatment he received (available online at ksi.uconn.edu/about/personal-stories/).

Once Pryor realized he had successfully saved a man's life, he experienced a burst of adrenaline he'd never felt before. "Once everyone has left the medical tent and you have a chance to reflect on your day, it really hits you," he said. "It was good affirmation that I'm in the right line of work and doing the right research. It really reminded me why I became an athletic trainer and fueled me to keep doing research so we can develop best practices and save more lives."

His situation was dire. "He looked me straight in the eyes and asked me if he was going to die," Huggins said.

HOME FOR CHRISTMAS

Anita Dixon (center) and her four AT students

WHO: Anita Dixon, MS, ATC
WHERE: Westbrook, Maine
WHEN: Nov. 29, 2012

DESCRIBE HOW YOU WERE FEELING IN THAT MOMENT.
I didn't initially see it, but I heard [referee Larry Moreau] hit the floor. I rushed over – I

BY: JAIMIE SIEGLE AND JORDAN GRANTHAM

ATHLETIC TRAINERS KNOW HOW TO SAVE LIVES, but they hope they'll never have to. When confronted with life or death moments, these ATs stayed calm and called upon their extensive training to successfully save athletes, spectators, officials and more from the brink. Our first-ever Lifesaver Issue celebrates some of the athletic trainers across the country whose heroic actions demonstrate the immeasurable value of the profession.

EMERGENCY ON THE ICE

WHO: Janielle Monbleau, ATC
WHERE: Methuen, Mass.
WHEN: Jan. 14, 2013

When she first saw 16-year-old hockey player Brady Barron skating toward the bench, she didn't see any blood. He'd suffered a laceration from a skate on his left wrist as he collided with a player from the opposing team. "The way his arm was positioned, I didn't think the laceration had opened up," Monbleau said. "I thought he had just gotten hit but he looked like he was in so much pain, and that's when his glove flew off."

The skate had severed a major artery, damaging several nerves and 12 tendons – enough damage to lose most of the feeling in his hand. She applied pressure to the injury and yelled for an administrator to call 911. Seeing blood all over the ice, the manager of the rink began implementing its emergency action plan. "The police were there within a few minutes, and the head athletic trainer was actually downstairs working the basketball game," she said. "An EMT father from the opposing team came down to help, applied pressure to the brachial artery and stopped the bleeding rather quickly." Barron remained conscious the whole time and was able to answer questions, such as whether he felt numbness. "[I think it helped] having his dad helping him get his helmet off and being right there talking to him. "I just did my job and did what I thought was right."

A week later, doctors told Barron he would've had about two minutes to live if it weren't for Monbleau's actions. "When it comes to hockey I've always had a worry with skate lacerations, especially to an upper extremity or a neck, which we've seen in NHL games before," Monbleau said. "A "worst case scenario" always runs through my head so if it happens I know what I'm going to do, and I'd done that a few minutes before I saw [Brady's injury]."

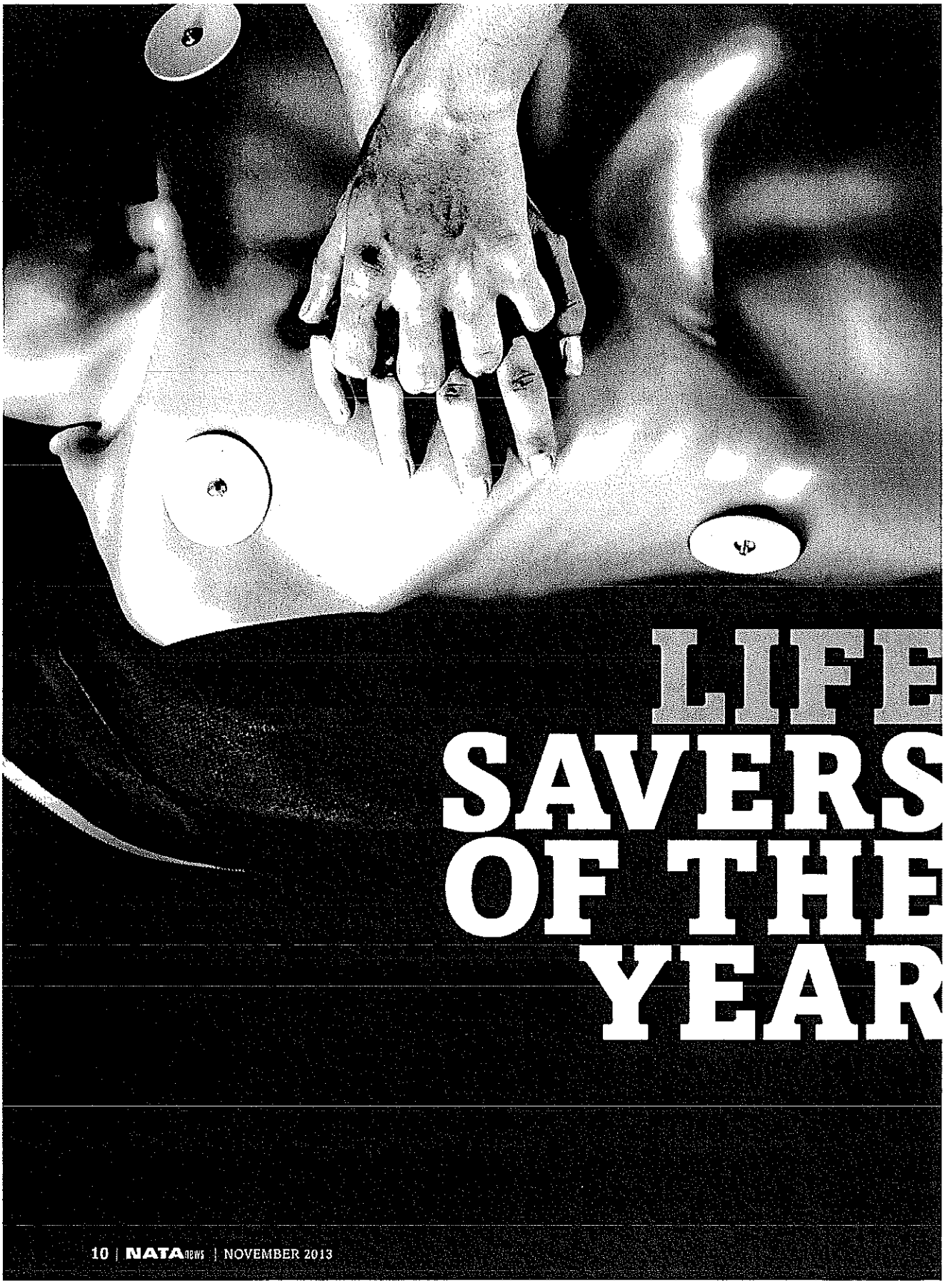
A TEAM EFFORT

WHO: Jessica Hilgendorf, ATC, LAT;
Tom Bradley, MS, ATC, LAT;
Chris Shaddock, ATC, LAT;
and Lindsey Thomas, LAT
WHERE: League City, Texas
WHEN: Sept. 21, 2013

DESCRIBE HOW YOU WERE FEELING IN THAT MOMENT.
We actually saw the camera man walking in. One second he was standing up, the next second he was face down on the turf. [At first] I thought he'd just tripped. Everything happened so fast but no one went into panic mode; everyone knew what they needed to do. [We] kept our calm, took care of business and that was it. Afterwards my heart was racing but during that moment you do what you have to do.

HOW QUICKLY WAS THE VICTIM REVIVED? DID THE PROCESS GO SMOOTHLY, OR DID IT REQUIRE SOME IMPROVISING?
I saw his eyes rolling in the back of his head from the side… You could tell he was breathing but it was very labored, and when we flipped him over he had an abrasion on his head. I checked at the neck for a pulse, didn't feel anything, checked at wrist and neck again. Lindsey cut the shirt off of the guy. Chris ended up putting the AED pads on him and the AED said "shock advised right away." After we delivered the shock I did 30 compressions. Tom did two breaths, and then he awoke. I don't know how to explain it, but right as I was about to start compressions again you could feel the heart start pumping again and coming back.

HOW DO YOU FEEL ABOUT THE FACT THAT A PERSON IS STILL AROUND TODAY IN PART BECAUSE OF YOUR ACTIONS?
The [cameraman] had a long, white beard, a coach joked [that we] "saved Christmas." I guess I didn't feel like I "saved a life," I just felt relieved he was awake and wasn't unconscious when we left. I was glad we were there and we all knew how to act, everyone had a role and did their role perfectly. I'm thankful we could all utilize our skills we practice year after year, although you hope you never have to use them.



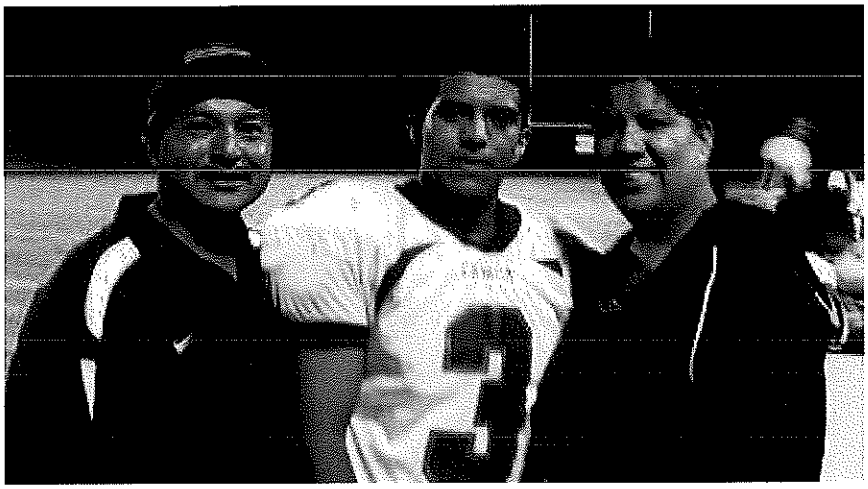
LIFE SAVERS OF THE YEAR

Tucson Citizen

Athletic trainer saves football player with defibrillator

by Geoff Grammer on Apr 23, 2009, under Education, Local, Sports

More schools getting device to treat cardiac arrest



Dad Phil (left), Emilio (center) and Alberta Martinez

When 17-year-old Cienega sophomore football player Emilio Martinez collapsed in a weight training class Monday at the Vail high school, Deana Schneider wasn't thinking about budget cuts.

The quick response of the 28-year-old athletic trainer, and a recently-purchased automated external defibrillator, saved the teen's life when valves in his heart began to malfunction, causing him to faint and go into cardiac arrest.

"Without that (device) and without her there, the doctors said my son would have probably died," said Phil Martinez. ". . . I can't tell you how grateful my wife and I are that they were there and handling the situation the way they did.

"That AED? It's already paid for itself. Every (school) better have one. Even if they never need it, they better have one."

Martinez, a 5-foot-6, 160-pound running back, will undergo surgery Thursday at University Medical Center. Doctors on Wednesday diagnosed him with ventricular fibrillation.

Lifesaver not expensive

At the urging of Schneider, Cienega purchased the Cardiac Science Power Heart G3 device for $1,500 in July 2008.

Even as schools and districts across the country, including Cienega, shave budgets, assistant principal and head football coach Nemer Hassey said the school will buy two more defibrillators to place around campus before the 2009-10 school year begins.

"It's a no-brainer," Hassey said. "You do more fundraisers or find other areas to work around. But cutting back on stuff like this, things that are about safety, you can't cut corners on that."

Of the 26 Class 4A and 5A schools competing in southern Arizona, at least three – Flowing Wells, Canyon del Oro and Amphi – do not have defibrillators on campus.

Flowing Wells Athletic Director Pat Weber said in an e-mail Wednesday the school has "put in for several for the next school year."

Some schools have multiple defibrillators, including Nogales High, which has six.

Sahuaro Athletic Director Sandy Novak said her school's lone device was bought through the Sahuaro Cougar Foundation and personal donations.

Tucson High Assistant Principal Herman House said his school, with the largest enrollment in southern Arizona, has two of the devices – one purchased by the school, the other donated after the school hosted a community heart screening event two years ago.

"These are things you hope you never have to use," Schneider said, "but why risk not having one ready to go if something does happen?"

Workout seemed routine

Martinez had just wrapped up his daily workout in his advanced weights class Monday afternoon.

Physical education teacher Jay Johnson, an assistant Cienega football coach, saw Martinez faint, hit his chin on a weight bench barbell as he collapsed and drop to the floor unconscious.

Johnson is trained in cardiopulmonary resuscitation, as are all of Cienega's coaches. He began attending to Martinez as a student ran to get Schneider.

"When I got there, I immediately assessed the situation and knew right away we needed the AED," Schneider said.

She has two degrees, has been CPR and first-aid certified since 2000 and has been Cienega's athletic trainer for two school years.

"I've never actually had to use an AED or even do CPR before," she said. "I'm trained for both, but never have actually been in a situation where I had to do it. It was sort of an out-of-body experience. I guess the training just took over and I was just doing what I knew to do to help him."

Device a snap to use

The defibrillator Schneider used Monday is not hard to use.

The Power Heart G3 has voice commands that automatically play upon the device being opened. Once adhesive electrode pads are placed on the person being treated, the device monitors the heart rate and other

vital signs and determines whether a shock is necessary.

Some devices automatically administer an electric shock. Others, like the one used on Martinez, require a person to push a button.

The defibrillator Schneider used also has internal memory capabilities.

"When we were done," Schneider said, "I plugged this into my computer and it gave the paramedics and doctors a printout of everything that happened from the time I opened the AED to the time I closed it, including all his heart rates and any other info."

Gridiron dreams end

Martinez, a seemingly healthy athlete in a family with no history of heart conditions, has been at University Medical Center since the collapse, frequently visited by friends and family members.

His football playing days are essentially over.

The American Heart Association says his condition essentially forces the heart to pump little or no blood when its lower chambers begin operating irregularly.

"The ventricles 'flutter' rather than beat," according to the association's Web site.

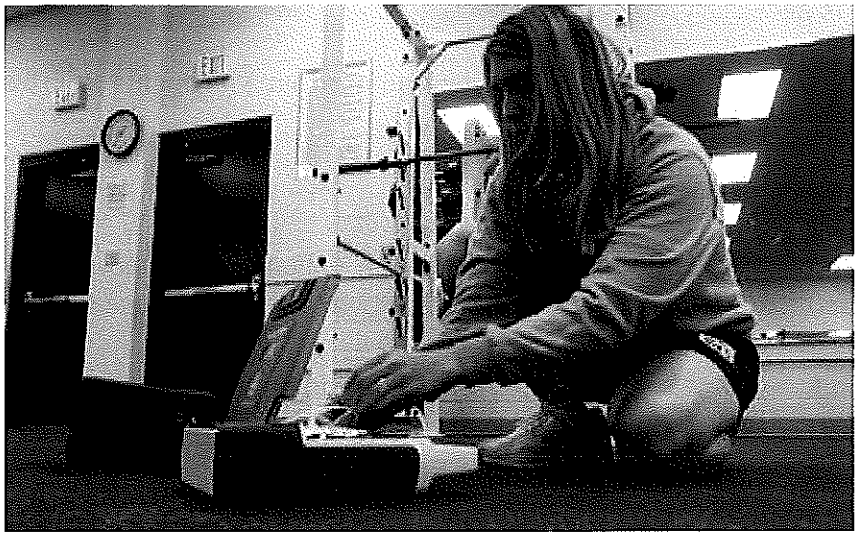
The electric shock from the defibrillator allowed Martinez to survive long enough for paramedics from the Rincon Valley Fire Department to arrive and take over before he was airlifted to UMC.

Martinez will undergo surgery Thursday to implant what is essentially a portable automated defibrillator in his chest, Phil Martinez said.

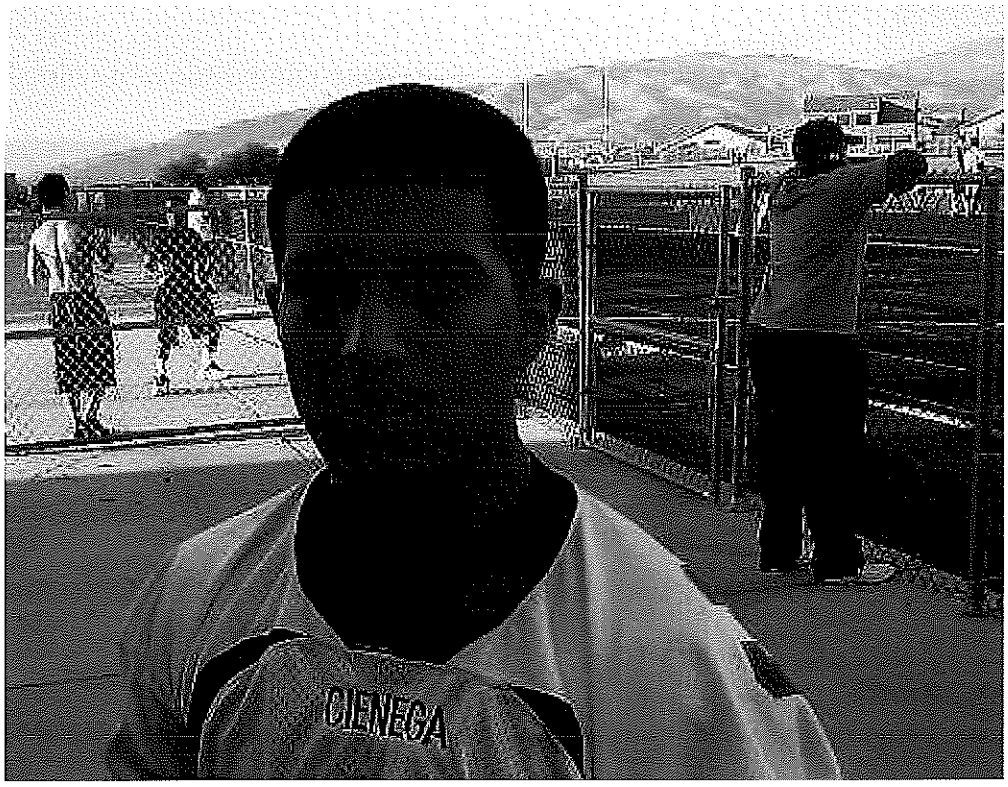
"It is designed to monitor when those lower chambers stop working right," he said. "When they see that happening, it will automatically send out an electric shock."

Phil Martinez said he and his wife – the parents of four, with Emilio the youngest – couldn't help but think of what might have been.

"This just came out of nowhere" the father said. "Right now, we just can't say how grateful we are to the school, to Deana and Jay, and to everyone that helped keep him alive."



Cienega athletic director Deana Schneider used an AED defibrillator to revive a student who went down in the weight lifting room on Monday.



Emilio Martinez

Automated external defibrillator

An automated external defibrillator is a portable device used to restore normal heart rhythm to patients in cardiac arrest.

An AED is applied outside the body. It automatically analyzes the patient's heart rhythm and advises the rescuer whether or not a shock is needed to restore a normal heartbeat. If the patient's heart resumes beating normally, the heart has been defibrillated.

An AED is used to treat cardiac arrest. It is a lifesaving device because cardiac arrest is a sudden condition

that is fatal if not treated within a few minutes.

Heart attacks and other conditions can cause ventricular fibrillation. In ventricular fibrillation, the electrical signals in the lower part of the heart are uncoordinated and ineffective. Very little blood is pumped from the heart to the body or the lungs. If ventricular fibrillation is not treated, it will result in cardiac arrest.

Source: U.S. Food and Drug Administration

How to operate it

• Regardless of which brand of AED is used, the only knowledge required to operate it is to press the "ON" button.

• Once the AED is turned on, it actually speaks to you in a computer-generated voice that guides you through the rest of the procedure.

• You will be prompted to place a set of adhesive electrode pads on the victim's bare chest and, if necessary, to plug in the pads' connector to the AED.

• The AED will then begin to automatically analyze the person's ECG rhythm to determine if a shock is required. It is critical that no contact be made with the person while the machine is analyzing the ECG. If the person is touched or disturbed, the ECG may not be accurate.

• If the machine determines that a shock is indicated, it will automatically charge itself and tell you when to press the button that will deliver the shock.

• Once the shock is delivered you will be prompted to resume CPR.

Source: eMedicineHealth

Have you ever performed CPR or used a defibrillator on someone in an emergency?

Yes: 19%

No: 80%

118 users voted

Citizen Online Archive, 2006-2009

This archive contains all the stories that appeared on the Tucson Citizen's website from mid-2006 to June 1, 2009.

In 2010, a power surge fried a server that contained all of videos linked to dozens of stories in this archive. Also, a server that contained all of the databases for dozens of stories was accidentally erased, so all of those links are broken as well. However, all of the text and photos that accompanied some stories have

been preserved.

For all of the stories that were archived by the Tucson Citizen newspaper's library in a digital archive between 1993 and 2009, go to Morgue Part 2

HOUSE OF REPRESENTATIVES

SCR 1005

rights of caregivers; recognition
Prime Sponsor: Senator Barto, et al., LD 15

X Committee on Health

Caucus and COW

House Engrossed

OVERVIEW

SCR 1005 urges the Arizona legislature to recognize the rights of family members, caregivers and guardians of individuals with serious mental illness.

PROVISIONS

1. Urges the members of the legislature to recognize that family members, caregivers and guardians of an individual with serious mental illness have the right to:
   a. Communicate with all providers of behavioral health care services for that individual;
   b. Be treated with respect and compassion when seeking the appropriate treatment and care for that individual;
   c. Receive access to approved information during discharge planning if there is an executed release of information on file or if a valid guardianship is in place;
   d. Receive information that will enable them to effectively evaluate the safety and security of their homes on discharge of that individual into their care;
   e. Expect to receive information relating to support services available in the community at all levels of service, including family support, education, counseling and grief counseling; and
   f. File a grievance, complaint or concern without fear of retaliation and to expect to receive information regarding the process of such filings.
2. Requests that the members of the legislature recognize that family members, caregivers and guardians of an individual with serious mental illness to make every effort to establish a complete medical history that includes information received from family members, caregivers and guardians and to actively include family members, caregivers and guardians in treatment planning.

CURRENT LAW

Not currently addressed in statute.

ADDITIONAL INFORMATION

SCR 1005 states that family members, caregivers and guardians of an individual with a serious mental illness are recognized as an integral part of that individual's treatment team. It also states that it is in the best interests of individuals with a serious mental illness for their behavioral health care providers to have access to any critical medical information and history known to family members, caregivers and guardians in order to enhance treatment, and under federal and state law allows them to share this information. Existing federal and state laws allow for family members, caregivers and guardians of an individual with a serious mental illness to share critical medical information and history with that individual's behavioral health care providers.

Additionally, it states that it is not in the best interests of an individual with a serious mental illness to be discharged to a family member, caregiver or guardian without first equipping that family member, caregiver or guardian with sufficient information and resources to provide adequate supportive and ongoing care.

ARIZONA HOUSE OF REPRESENTATIVES
Fifty-second Legislature - Second Regular Session

ROLL CALL VOTE

COMMITTEE ON HEALTH BILL NO. SCR 1005

DATE February 23, 2016 MOTION: dp

	PASS	AYE	NAY	PRESENT	ABSENT
Mr. Boyer					✓
Mr. Friese		✓			
Mr. Lawrence		✓			
Mr. Meyer		✓			
Mrs. Cobb, Vice-Chairman		✓			
Mrs. Carter, Chairman		✓			
		5	0	0	1

Sandy Kelly
COMMITTEE SECRETARY

APPROVED:

HEATHER CARTER, Chairman
REGINA COBB, Vice-Chairman

ATTACHMENT

Attachment 7

ARIZONA STATE LEGISLATURE

Fifty-second Legislature - Second Regular Session

COMMITTEE ATTENDANCE RECORD

COMMITTEE ON **HEALTH**

CHAIRMAN: Heather Carter VICE-CHAIRMAN: Regina Cobb

	DATE	2/16 /16	2/23 /16	/16	/16	/16
	CONVENED	4:33 m	4:02 pm	m	m	m
	RECESSED					
	RECONVENED					
	ADJOURNED	8:50 pm	6:05 pm			
MEMBERS						
Mr. Boyer		✓	--			
Mr. Friese		✓	✓			
Mr. Lawrence		✓	✓			
Mr. Meyer		✓	✓			
Mrs. Cobb, Vice-Chairman		✓	✓			
Mrs. Carter, Chairman		✓	✓			

√ Present --- Absent exc Excused

Attachment 8